SIXTH FIVE-YEAR REVIEW REPORT
FOR
WAUSAU GROUND WATER CONTAMINATION SUPERFUND SITE
MARATHON COUNTY, WISCONSIN

Prepared by

U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

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LIST OF ABBREVIATIONS & ACRONYMS

AMR	Annual Monitoring Report
ARAR	Applicable or Relevant and Appropriate Requirement
BGS	Below Ground Surface
C12DCE	Cis-1-2 Dichloroethane
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
CFR	Code of Federal Regulations
CRA	Conestoga Rovers Associates
COC	Contaminant of Concern
CVOCs	Chlorinated Volatile Organic Compounds
DCA	Dichloroethane
DCE	Dichloroethylene or Dichloroethene
DEE	Diethyl ether
EPA	United States Environmental Protection Agency
ES	Enforcement Standard
EW	Extraction Well
FR	Federal Register
FS	Feasibility Study
FYR	Five-Year Review
GIS	Geographic Information System
GPM	Gallons per Minute
ICs	Institutional Controls
ICIAP	Institutional Controls Implementation and Assurance Plan
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAL	Preventative Action Limit
PCE	Perchloroethylene or Tetrachloroethylene
PRP	Potentially Responsible Party
Ppb	Parts per billion or ug/L (water) and ug/kg (soil/sediment)
Ppm	Parts per million, or mg/L (water) or mg/kg (soil/sediment)
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act of 1986
Site	Wausau Ground Water Contamination Superfund Site
TAL	Target Analyte List

TBC	To Be Considered
TCA	1,1,1-Trichloroethane or 1,1,1-TCA
TCE	Trichloroethylene
LTS	Long-Term Stewardship
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
UU/UE	Unlimited Use and Unrestricted Exposure
VC	Vinyl Chloride
VI	Vapor Intrusion
VOCs	Volatile Organic Compounds
WDNR	Wisconsin Department of Natural Resources

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the Sixth FYR for the Wausau Ground Water Contamination Superfund Site (Site). The triggering action for this policy review is the completion date of the previous FYR. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two OUs and both OUs will be addressed in this FYR. OU1 addresses the interim actions at the Site essentially selecting a remedy for the groundwater issues. OU2 is the Final Action that confirms the groundwater remedy and requires additional remedial actions.

The Wausau Ground Water Contamination Superfund Site FYR was led by Sheri L. Bianchin, Remedial Project Manager (RPM), EPA. Participants included Matthew A. Thompson, state agency representative at the Wisconsin Department of Natural Resources (WDNR). The relevant entities, such as WDNR and Charles Ahrens of GHD who represented the Potentially Responsible Party (PRPs) during the FYR inspection, were notified of the initiation of the FYR. The review began on April 10, 2019.

Site Background

The Site is located in the City of Wausau, Wisconsin ("Wausau" or "the City"), a city of approximately 39,000 people located in central Wisconsin along the banks of the Wisconsin River. The Site potentially affects six of the City's drinking water production/supply wells. The City's production wells are adjacent to the Wisconsin River and provide drinking water for people who reside on both sides of the Wisconsin River. In 1982, three of the wells were found to be contaminated with high levels of volatile organic compounds (VOCs).[1]

Historically, there were two areas of concern that are associated with the Wausau Groundwater Site. The first area is a Marathon Electric Corporation property along the West Bank of the Wisconsin River, which includes a closed former municipal landfill. The second area is the Wausau Chemical facility

[1] In the West Bank area, groundwater concentrations of Trichloroethylene (TCE) and its daughter products near the former landfill were over 2,000 u/L, and concentrations near CW6 were over 4,000 ug/L (1987). The extent of the plume, based on 1987 data, is shown on the attached Figure 2.1 in Appendix K (1989). In 2000, the highest level of total VOCs was in well R3D at 41,800 parts per billion (ppb).

located along the East Bank of the river[2]. The current land use remains mixed use consisting of commercial, industrial and residential uses.

The State of Wisconsin and EPA determined that, as a result of these historical operations at the Site, the groundwater and soil had become contaminated primarily with VOCs. In 1986, EPA added the Site to the National Priorities List (NPL). See Appendix A for additional background information and a Site location map in Appendix K.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Wausau Ground Water Contamination Site		
EPA ID: WID 980993521		
Region: 5	**State:** WI	**City/County:** Wausau/ Marathon County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**
Author name (Federal or State Project Manager): Sheri L. Bianchin
Author affiliation: EPA
Review period: 4/10/2019 – 3/13/2020
Date of site inspection: 10/29/2019
Type of review: Policy
Review number: 6
Triggering action date: 4/9/2015
Due date *(five years after triggering action date:* 4/9/2020

[2] Three primary source areas of ground water contamination have been identified: a municipal landfill, the Wausau Chemical Company and possibly the Wausau Energy Co. The landfill, which is on the west side of the site, operated from 1948 to 1955 and accepted almost all commercial, industrial and residential waste generated within Wausau. The landfill appears to be the predominant source of TCE contamination of the underlying aquifer. On the east side of the river, the Wausau Chemical Co. was found to be a likely source of soil and ground water contamination due to spills from past operations. Wausau Chemical, a bulk solvent distributer and transfer stations, spilled 1,000 gallons of Perchloroethylene (PCE)-contaminated waste in 1983 alone. On the east side, Wausau Energy, a petroleum bulk storage and disposal center, may have contributed to the contamination at the Site.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

A two-phase remedial investigation (RI) and Feasibility Study (FS) were carried out between August 1987 and September 1988.

The significant results of the RI, documented in a 1989 report, included the following:

- The City's production wells are located in a wedge-shaped aquifer composed of glacial outwash materials deposited within the pre-glacial bedrock river valley of the Wisconsin River. The aquifer is the sole source of potable water for the City of Wausau.

- The primary contaminants of concern (COC) affecting both the soil and groundwater are VOCs including PCE, TCE, cis-l,2-dichloroethene (C12DCE), chloroform, carbon tetrachloride and vinyl chloride (VC).

- Two separate sources of contamination were identified within the zone of influence of the City's production wells. The first source contributing to the groundwater contamination was found to be a former municipal landfill located south of municipal supply well known as City Well (CW) 6 on the Marathon Electric property in the West Bank area (west of the Wisconsin River).

- The predominant source of TCE contamination to CW6 and CW3 on the West Bank appears to be the Marathon Electric property/Former City Landfill area.

- The second source contributing to groundwater contamination at the Site was found to be the Wausau Chemical facility located between CW3 and CW4 in the East Bank area (east of the Wisconsin River). The primary COC found in the East Bank groundwater is PCE.

- Low concentrations of TCE and C12DCE were also detected in the aquifer under the Wisconsin River and were believed to be a remnant of the West Bank plume that had historically migrated beneath the river to the East Well Field.

- Soils at both source areas were contaminated with VOCs. The soils in the vicinity of the former municipal landfill and Marathon Electric were contaminated primarily with TCE. Soils on the Wausau Chemical property were contaminated primarily with PCE. Various exposure pathways for the soils were evaluated; however, the primary risk was found to come from the continuing leaching of the VOCs to the groundwater.

- Three plumes of contamination were found within the zone of influence of the City's production wells. The first was composed primarily of TCE and was emanating from the former municipal landfill (west of the Wisconsin River). This plume was found to split at the boundary of the source area, with one leg migrating north to CW6 and the second leg migrating under the Wisconsin River to CW3. The second plume originated from the southern boundary of the Wausau Chemical property east of the Wisconsin River and impacted both

CW3 and CW4. This plume was comprised primarily of PCE but contained other VOCs as well. The third plume originated from the northern boundary of the Wausau Chemical property east of the Wisconsin River, was primarily comprised of PCE and was impacting CW3.

- During the RI/FS, several important potential exposure pathways were found for the Site. Potential health risks were evaluated for the following exposure pathways and potentially exposed population: (1) residents using municipal water exposed to contaminant concentrations equal to the laboratory detection limits of 0.5 ug/l for PCE and TCE, and 1.0 ug/1 for DCE; (2) hypothetical, future users of a private well installed within the contaminated aquifer. It was assumed that a user would be exposed to the highest concentrations found in groundwater, approximately 4300 ug/l, to obtain the worst-case potential risk for this exposure scenario.

Response Actions

In 1985, while the RI/FS was underway, an initial response action was taken by the City of Wausau. A groundwater extraction system with air stripping treatment (required by the State of Wisconsin) began operating at the Wausau Chemical facility. The system consisted of a series of extraction wells in the shallow portion of the aquifer at the south end of the Wausau Chemical property. The Wausau Chemical groundwater system operated until 1996, when it was shut down and abandoned.

EPA issued an interim Record of Decision (ROD) in 1988 and a final ROD in 1989. EPA determined that the Site would be managed with two OUs as determined by the two RODs. EPA and WDNR entered into judicial settlements with potentially liable parties to fund the cleanups. The judicial settlements are memorialized in Consent Decrees (CDs) entered in 1989 and 1991.

The two primary Remedial Action Objectives (RAOs) of the 1988 ROD for OU1 (Interim Action ROD) addressing TCE in the West Well Field area are the following:

- Protection from long-term exposure to low levels of TCE from ingestion of drinking water; and

- Protection from future increased levels of contamination to the West Well Field.

The response actions outlined for the Site in the December 1988 interim ROD included the following remedial components:

- Installation of a groundwater extraction well located in the southern portion of the contaminant plume;

- Implementation of a treatment system for removal of contaminants;

- Installation of an additional extraction well, as necessary; and

- Preparation of an operation and maintenance (O&M) monitoring program.

The selected remedy established that the cleanup levels for the COCs in groundwater are the Maximum Contaminant Levels (MCLs) drinking water standards, found in the Safe Drinking

Water Act and the groundwater protection standards. WDNR's groundwater quality standards (WI Administrative Rule Chapter NR 140) are numerical standards set at two levels: an enforcement standard (ES) which is usually the same as the federal drinking water standard (except VC for the COCs at this Site) and a lower preventive action limit (PAL), which triggers the need for remedial response or other action at a facility.

The RAOs of the 1989 ROD for OU2 (Final ROD) were to address the remaining concerns at the Site following implementation of the Interim Action and are as follow:

- Reduction of long-term exposure to low levels of VOCs from ingestion of drinking water;
- Protection from potential future use of private wells in contaminated groundwater; and
- Protection from emissions of contaminants from proposed water treatment systems that release VOCs to the atmosphere.

The response actions outlined for the Site in the September 1989 final ROD included the following additional remedial components:

- Installation of soil vapor extraction (SVE) systems to remove VOC contaminants from soils at each of the identified source areas;
- Treatment of off-gases from the SVE system using vapor phase carbon units (the carbon was to be regenerated off-site); and
- Groundwater remediation utilizing the municipal wells and existing air strippers for expedited removal of contaminant plumes.

This remedy also includes monitoring of groundwater and soil. The groundwater cleanup standards for the Site are both the EPA's drinking water standards (MCLs) to protect drinking water and the WDNR's groundwater standards (WDNR Chapter NR 140) (ESs) to protect groundwater. These standards are shown below in Table 1 along with the WDNR's PALs. Although the WDNR PALs are not the performance standards specified by the ROD, EPA expects that the WDNR would require that the PALs be met for groundwater protection in order to close out the Site.

Table 1- Groundwater Cleanup Standards

Contaminant of Concern	**Federal MCL (ug/L or ppb)**	**Wisconsin NR 140 ESs (ug/L or ppb)**	**Wisconsin NR 140 PALs (ug/L or ppb)**
TCE	5	5	0.5
PCE	5	5	0.5
C12DCE	70	7	0.7

VC	2	0.2	0.02

Although soil specific, numerical cleanup levels were not established in the 1989 ROD, the ROD stated: the performance standards for the SVE in source soils will be determined using a mass-flux groundwater model to determine what cleanup levels are needed in soils to achieve cleanup of the aquifer. These cleanup levels will be based on the requirement to attain Wisconsin NR 140 groundwater standards for PCE (1.0 ug/1) and TCE (1.8 ug/1) at the source boundary. Attainment of cleanup levels will be confirmed through sample analysis of groundwater at the boundary of the source areas.

As discussed below, risk evaluations were eventually conducted by the WDNR within its closure process for the East Bank and West Bank SVE systems. This process was used to determine when the East Bank and West Bank SVE systems could be turned off and dismantled. WDNR has required post closure procedures to be followed along with the implementation of Institutional Controls (ICs). For example, WDNR requires a pavement cover and building maintenance as conditions of closure, which, in effect, requires an annual inspection of the paved areas surrounding the Wausau Chemical property. These requirements have not been incorporated in the decision documents; however, consideration should be given to adding these requirements to the remedy to ensure long-term protectiveness.

Status of Implementation

The remedial action components included in the 1988 and 1989 RODs have been implemented. The PRPs initiated the remedial action after agreeing to implement the 1988 ROD through a CD that was entered with the court on July 7, 1989. After that, the final remedial action occurred through a CD entered with the court on January 24, 1991. The final remedial action at the Site consisted of two SVE systems to address the source areas as well as groundwater extraction and treatment utilizing existing municipal production wells (CW3 and CW6) and a remediation well (EW1). The Site location is shown on Figure 1.1, and a Site plan is presented on Figure 1.2, located in Appendix K.

The West Bank municipal supply wells, EW1, and site monitoring well locations are shown on the Site plan. (See Figure 1.2 in Appendix K.) EW1 was installed to remove contaminants from the south end of the plume and to create a hydraulic flow barrier between the source area and City Well CW6. The groundwater remediation at the Wausau Site has been ongoing for over 25 years.

Construction and operation of a treatment system for the City's drinking water system, installation of a groundwater extraction well located in the West Bank contaminant plume and construction and operation of two SVE systems were completed in accordance with approved work plans. The treatment for the municipal drinking water system was installed in 1985. Extraction Well (EW1) began to operate in 1990 and, along with the two city wells (CW3 & CW6), captured the various plumes for treatment. Since that time, the City of Wausau has operated its production wells, including the air strippers to remove any VOCs in the water. The SVE systems began operating in January 1994. The West Bank SVE system was shut down in April 1996. The East Bank SVE system was shut down in January 2001, and ICs were implemented for those areas in accordance with WDNRs closure requirements (see Old Landfill Area section below). The Preliminary Close-Out Report, which documents the completion of construction, was finalized in March 1994.

City Production Wells

Both CW3 and CW6 are operating as required as part of the remediation system at the Site. Drinking water is monitored at the City of Wausau Water Utility to ensure that the air strippers are efficiently removing the VOCs and that the water meets the drinking water performance standards. As mentioned earlier, the City operates six production wells. While only CW3 and CW6 are part of the remediation system, data for all the City's wells are presented in the Annual Monitoring Reports (AMR) provided to EPA and WDNR, consistent with previous reports. Each AMR shows, by month, the number of hours each well was operated, the number of gallons pumped from each well and the average pumping rate while the well was operating.

Recommended pumping rates for CW3 and CW6 were established in an August 4, 1995, letter from EPA to ensure appropriate capture of the plumes. In accordance with the letter, pumping of CW3 was to be maintained between 65 hours per week at 1,200 gallons per minute (gpm) to 100 hours per week at 1,100 gpm. Pumping of CW6 was set at 85 hours per week at 1,400 gpm. CW3 and CW6 generally operate on alternate weekly schedules where CW6 operates on the weekdays and CW3 operates more on the weekends.

During 2019, CW3 operated for an average of 71 hours per week with an average pumping rate of 1,276 gpm, exceeding the requirements of 65 hours per week and average flow rate of 1,200 gpm.
CW6 pumped an average of 96.3 hours per week with an average pumping rate of 1,346 gpm in 2019. Although well rehabilitation is conducted on a regular basis, CW6 is no longer capable of pumping at the prescribed rate of 1,400 gpm. However, the pumping duration of CW6 has been increased to an average of more than 95 hours per week, which is considerably greater than the requirement of 85 hours per week, thus offsetting the decreased pumping rate. The total volume of groundwater pumped by CW-6 during 2019 was 9% higher than the EPA-recommended volume of 371,000,000 gallons/year.

Old Landfill Area

The old landfill on the Marathon Electric Property is covered mostly with asphalt paving materials. WDNR approved final closure of the East Bank source remediation SVE system in September 2007. EPA acknowledged the closure as part of the remedial action process. As part of ongoing O&M, EPA has required that, at a minimum, the PRPs conduct an annual inspection to monitor the integrity of the paved areas of the property and make recommendations to minimize rainwater infiltration and prevent direct human contact with soils. These inspections are documented in the AMR.

Although it is inspected periodically and maintained, the landfill cover does not appear to be fully effective in preventing infiltration of precipitation which may be causing more groundwater contamination. The landfill cover must be evaluated to determine what additional upgrades are needed.

(Former) Wausau Chemical Pavement

The pavement at the Site is inspected annually and presented in the AMR. This pavement serves as a cover over the areas which were contaminated with VOCs and treated. The pavement is currently in good condition.

Vapor Intrusion (VI) Investigation

The VI Investigation Work Plan was approved in 2017 by EPA, and VI work has been underway since then. From March 2017 to present, the PRPs performed additional field work to supplement existing Site data in an effort to better understand the potential for VI risk in areas adjacent to the known groundwater plume footprints at the Site. In March 2017, temporary monitoring wells were installed, and groundwater samples were collected for VOC analysis to further delineate groundwater impacts in residential and commercial/industrial areas on the West Bank and the East Bank.
In addition, vapor probes were installed, and vapor samples were collected to delineate the horizontal and vertical extent of potential VOCs in the vadose zone on the West Bank and the East Bank.

This is discussed further in the Data Review section of this document. Additionally, more VI work is needed to determine if the VI pathway is a concern at the Site.

Institutional Controls

Areas that do not support UU/UE and for which ICs[3] are required are noted in the Table 2 below. Maps that depict the current conditions of the Site and areas that do not allow for UU/UE will be developed as part of the required IC evaluation activities.

Table 2: Summary of Planned and/or Implemented ICs.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)[4]	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Former Loading Dock at Wausau Chemical Company Property Area of Soil treated to industrial cleanup standards	Yes	No	Review is underway	Commercial/ industrial use only; prohibit residential use; prohibit well installation	Proprietary Controls in-place: Deed Restriction (recorded on April 26, 2007 at the Marathon County Register of Deeds - see Appendix F) Governmental Controls in-place: Zoned industrial

[3] ICs are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for exposure to contamination and that protect the integrity of the remedy. ICs are required to ensure long-term protectiveness for any areas which do not allow for UU/UE and ensure no inappropriate land and groundwater uses occur and maintain the integrity of the remedy.

[4] If the notation is "review is underway" then there is some uncertainty of exactly where ICs are needed, and this needs to be further explored.

					Informational Controls in-place: Notice of residual contamination placed on WDNR's website (BRRTS/GIS) Registry per WI regulation Governmental Controls (Planned) Imposition of Continuing Obligations by WDNR per the WI regulations (updates are planned)
Landfill on Marathon Electric Property - two parcels Area of Soil treated to industrial cleanup standards	Yes	No	Two Parcels: 291-2907-252-0990 and 291-2907-252-0997. Review of affected parcels is underway	Commercial/ industrial use only; prohibit residential use; prohibit well installation	Proprietary Controls in-place: Deed Restriction (recorded on April 26, 2007 at the Marathon County Register of Deeds - see Appendix F) Governmental Controls in-place: Zoned industrial Informational Controls in-place: Notice of residual contamination placed on WDNR's website (BRRTS/GIS) Registry per WI regulation Continuing Obligations per the WDNR regulations (updates planned)

Groundwater - Wausau Chemical Company Property	Yes	No	Area within the City of Wausau where residual GW contamination from the Site has become to be located (See map in Appendix J)	Prohibit residential use; prohibit well installation	Same as above
Groundwater - former landfill on Marathon Electric property	Yes	No	Same as above	Prohibit residential use; prohibit well installation	Same as above
Groundwater – Other areas where levels will not allow UU/UE ·	Yes	No	Maps currently available; however, a review is underway	Ensure no inappropriate groundwater uses	Same as above
Possible Vapor Intrusion Impacted Areas	Areas under review	No	Review is underway	If VOC vapors move or have the potential to move into structures such as homes or commercial establishments above health based levels, more work, such as mitigation, may be required	Consideration will be given to updating the ICs including establishing continuing obligations per the WDNR regulations.

Status of ICs

Although not clearly specified in the ROD[5], ICs are necessary to ensure long-term protectiveness of

[5] Although the RODs imply that ICs would be necessary to protect the integrity of the remedy and minimize potential for exposure, the requirement is not clear. The scope of OU1 is limited to the contaminant plume impacting the west well field and CW6. The RAOs of the ROD for OU1 (Interim ROD) include: 1) protection from long-term exposure to low levels of TCE from ingestion of drinking water and 2) protection from future increased levels of contaminants to the west well field.

The RAOs of the ROD for OU2 (Final ROD) are to address the remaining concerns at the Site following implementation of the Interim Action and include: 1) elimination of the continued sources of groundwater contamination identified as the former City landfill/ Marathon Electric property and the Wausau Chemical property and

the remedy. The 1991 CD requires that Notices of the CD[6] be filed in the chain of title with the Office of the Register of Deeds, Marathon County. Such notices must be filed for each parcel of the Site owned by the PRPs, including parcels owned by the Wausau Water and Sewerage Utilities where physical components of the remedial action will be or are located and those parcels where source areas of contamination are located. In general, these areas include the parcels of land owned by the City of Wausau and Marathon Electric Manufacturing Corporation. These areas include the following: (1) the parcels where the former City/ Marathon Electric Landfill was located; (2) the land which comprises the Wausau Chemical Corp. property; (3), the land upon which the interim OU extraction well described in the Interim ROD and RD/RA Work Plan is located and (4) the parcels upon which the City Wells (i.e., CW3 and CW6) are located. The CD states that any deed, title or other instrument of conveyance regarding a parcel of the facility described above shall contain a notice that the parcel is the subject of this CD, setting forth the specific information such as the name of the case, case number, the court having jurisdiction, the address of the Clerk of the Court for the court having jurisdiction herein and a notation that a copy of the CD may be obtained by contacting the Clerk of the Court or the City Clerk, City Hall, Wausau, Wisconsin.

EPA could not find evidence that the notices required by the CD had been filed by the PRPs in the past. However, this was recently done when the property was transferred to the City of Wausau.

Deed Restrictions (Proprietary Controls[7]):

As part of the closure process, WDNR required the deed restrictions be put in place on two parcels[8] at Wausau Chemical facility as a condition by WDNR to close out the source/soil remediation phase of the project on the East Bank of the river. Several deed restrictions titled *Declaration of Restriction* were recorded for the Wausau Chemical Company property in 2007 and 2008 once the SVE system was removed. In December 2019, title to Wausau Chemical was transferred to the City of Wausau.

WDNR also required the deed restrictions be put in place on the Marathon Electric facility property as a condition for WDNR to close out the source/soil remediation phase of the project on the West Bank of the river. That deed restriction does not appear to be in-place yet.

Additional IC evaluation activities are needed to ensure effective ICs have been implemented. A review of all the IC instruments and title work is currently underway by EPA and WDNR to ensure there are appropriate land and water restrictions and that the restrictions can be enforced by EPA and WDNR. It is estimated that the IC review will be done by the end of 2020.

Also, deed restrictions were required for the source/soil remediation area on the west side of the Wisconsin River, in accordance with the SVE closure documents. These deed restrictions are also under review by EPA and WDNR.

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2) prevention of exposure to contaminants present in the two additional groundwater contaminant plumes identified.

[6] The CD also states that those areas of the Facility where notices shall be filed may be freely alienated, provided that the U.S. and the State receive notice of such alienation and a copy of the CD is given to the grantee.

[7] Controls on land use or activities that are considered private in nature because they tend to affect a single parcel of property and are established by private agreement typically between the property owner and a second party who, in turn, can enforce the controls.

[8] Sometime after that date, it appears that the two parcels may have been combined into one parcel.

Wisconsin ICs Public Registry and Continuing Obligations: Informational Devices[9]

The Site has been included on the WDNR's Remediation and Redevelopment Program's internet accessible Geographic Information System (GIS) Registry, to provide notice of residual contamination and of any continuing obligations in accordance with s. NR 812.09(4) (w), Wis. Adm. Code. The GIS Registry is also known as the Bureau for Remediation and Redevelopment Tracking System (BRRTS on the Web) at http://dnr.wi.gov/topic/Brownfields/clean.html. The purpose is to provide public notice of residual contamination and of any continuing obligations. Sites can also be viewed on the Remediation and Redevelopment Sites Map (RRSM), a map view, under the GIS Registry layer, at the same web address. A copy of that notice is included in Appendix F.

Ordinance & Continuing Obligations: Governmental Controls[10]

The existing Wausau Municipal Code contains a Wellhead Protection ordinance in Chapter 23.54, adopted by the City in Appendix G and also includes a provision to regulate Private Water Wells in Chapter 19.30. Under Wausau's City Code, the City has authority to deny site plan applications that include groundwater wells. The City also has the authority to regulate installation of groundwater wells and to require abandonment of existing groundwater wells.

The Wausau Chemical and Marathon Electric properties are also zoned for industrial purposes by the City of Wausau. This zoning dictates the acceptable land use for both these properties and is a type of governmental IC.

WDNR has authority to impose requirements, limitations or conditions and enforce those conditions under Wisconsin Statutes s. 292.12(3) via a letter that specifies the site-specific conditions. These requirements are also continuing obligations, which are legal requirements that apply to a property even after the ownership changes. When WDNR approves a cleanup with residual contamination, it ensures long-term protection of public health and the environment. WDNR does this by establishing continuing obligations in the approval letter, which is the state's cleanup approval document. Because WDNR does not require removal of all contamination, it is common for approved cleanups to have continuing obligations. Site specific continuing obligations are planned for the Wausau Chemical and Marathon Electric Sites.

Current Compliance:

Based on inspections and interviews, EPA is not aware of current Site or media uses that are inconsistent with the stated objectives required by the existing or planned ICs. The existing deed restrictions also appear to be currently functioning as intended. However, in the past, a deed restriction was violated when the Wausau Chemical property was modified without proper approval. This was discussed with the PRPs, and the property uses are now inspected periodically to ensure no other issues will arise. However, the Wausau Chemical Site was sold to the City of Wausau, and it is currently not in use. Thus, this is no longer a concern. Even though ICs have not

[9] Informational Devices - IC instruments that provide information or notification that residual contamination could remain on site. Common examples include state registries of contaminated properties, notices in deeds, and advisories.
[10] Governmental Controls - Controls using the regulatory authority of a government entity to impose restrictions on citizens or sites under its jurisdiction. Generally, EPA turns to state, local, or tribal governments to enforce existing controls of this type and to establish new controls.

been implemented on the former Wausau landfill, EPA has not noted any uses during the recent inspection or through other reviews which would result in disturbances to that area. However, based on current site conditions, EPA has determined that additional ICs are necessary to ensure the protectiveness of the remedy, such as imposing continuing obligations by WDNR and implementing additional deed restrictions. These additional ICs are set forth below.

Long-Term Stewardship:

Long-term protectiveness at the Site requires compliance with land and groundwater use restrictions to ensure the remedy continues to function as intended. Long-term stewardship (LTS) helps ensure effective ICs are maintained, monitored and enforced and that the remedy continues to function as intended with regard to the ICs. LTS involves ensuring effective procedures are in place to properly maintain and monitor the Site. An LTS Plan will be developed in an Institutional Controls Implementation and Assurance Plan (ICIAP) (or in an update to the O&M Plan) that includes procedures to ensure long-term ICs stewardship, such as regular inspection of ICs at the Site and certification to EPA that the ICs are in place and effective. Additionally, EPA will explore use of a communications plan along with an update to WDNR's continuing obligations for LTS.

ICs Follow-up Actions:

Initial IC evaluation activities have revealed that additional steps must be taken to evaluate the effectiveness of the existing ICs and determine whether additional ICs are required. EPA and WDNR requested an IC study and work plan from the PRPs. The PRPs submitted a draft IC study in March 2015 and have resubmitted it several other times to incorporate comments given by EPA. To ensure that effective ICs are implemented, monitored, maintained and enforced, EPA and WDNR must complete reviewing the IC study along with additional IC evaluation activities to ensure effectiveness of the existing ICs and LTS of the Site, including: (1) preparing and recording restrictive covenants consistent with Wisconsin law; (2) amending the decision documents to clarify the role of ICs and identify ICs that are needed at the Site as part of the remedy; (3) ensuring detailed maps are available; (4) preparing an LTS plan (by amending the O&M plan or preparing an ICIAP); and (5) examining title work to determine if any inconsistencies can be identified, all ICs are in-place and the recent submission fulfills the notice required in the chain of title in accordance with the CD.

Systems Operations/Operation & Maintenance

Since the last FYR, the required O&M and periodic groundwater sampling required by the CD have been completed and reported in the AMRs submitted for the years 2015-2019. The PRPs submitted the 2019 AMR in January 2020, and it contains several recommendations that are under review by EPA. The recommendations reiterate the requests to permanently shut off EW1 in accordance with the pilot study[11] and modify the monitoring program. In February 2020, the following O&M activities took place: (1) inspections of the City's production wells and groundwater monitoring wells and (2) the annual inspection of the paved surfaces near the East Bank source area.

The City of Wausau has operated its Production Wells throughout the time periods covered by this review. Drinking water is monitored at the City of Wausau Water Utility to ensure that the air

[11] A groundwater sample was collected from EW1 during the annual monitoring event and no VOCs were detected.

strippers are efficiently removing the VOCs and that the water meets the performance standards. The City officials conduct tests of the treated water as it leaves the plant after the wells have been run for a few hours. The test results can be found on the WDNR website at: https://dnr.wi.gov/dwsviewer/ (enter Wausau Waterworks for the name under public water works).

The Wausau production well pumping rates are described in each AMR. Although significant reductions in groundwater contamination are evident at the Site (discussed in Data Review), it is expected that the extraction well will need to operate for the foreseeable future. In addition, the City of Wausau's treatment plant will need to continue to operate both air strippers for at least several more years. The City of Wausau requested EPA and WDNR's permission to move the treatment plant and cease operation of the air stripper for the CW3 well. This request is under review by EPA and WDNR.

In June 2000, the Groundwater Monitoring Plan replaced the 1993[12] Monitoring Program Plan as the approved groundwater monitoring program. The Groundwater Monitoring Plan consists of annual sampling of monitoring wells and quarterly sampling of EW1[13] (prior to it ceasing operation in July 2012). Since the 2015 FYR, several modifications were made to the monitoring program, including a reduction in the frequency and number of wells to be sampled. Currently groundwater is sampled annually and analyzed for the site-specific VOC list (see Table 7 in Appendix L) using EPA Method 8260B. A summary of the groundwater sampling event procedures, including field parameter measurements, is documented in each of the approved Groundwater Monitoring Plan and the AMRs.

All Site monitoring wells are inspected each year. Inspection forms are used to document the well condition. Also, at least once every five years, the PRPs conduct a well survey to determine if any new wells exist in the site area and inspect the asphalt parking lot covering the old landfill on Wausau Chemical in accordance with the Maintenance Plan required by WDNR during the closure.

O&M Cost Estimates

O&M Cost estimates for the last five years can be found in Appendix J.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2015 FYR

OU #	Protectiveness Determination	Protectiveness Statement
OU1/OU2/Sitewide	Protectiveness Deferred	A protectiveness determination of the remedy for the Wausau Groundwater Site cannot be made at this time until further information is obtained. The current FYR defers any determination about whether the remedial

[12] From 1993 through 2000, groundwater monitoring was conducted in accordance with the Monitoring Program Plan, which required a complex system of monthly, quarterly, semiannual and annual monitoring (CRA, 1994).

[13] The EW1 groundwater extraction well on the Marathon Electric property operated at approximately 800 gpm until July 2012, when it could no longer function after numerous attempts to rehabilitate it. EPA and WDNR approved a pilot study to determine if an extraction well is still necessary in the southern end of the west plume for containment of the plume.

		action at the Wausau Groundwater Site is protective of human health and the environment in the short-term until EPA has investigated the existence of any VI pathways that could result in unacceptable health risks. Although, the remedy is functioning in accordance with the RODs, available data are insufficient to determine whether there is a potential or actual VI exposure pathway; additional evaluations are necessary. It is expected that this action will take approximately 1 year to complete, at which time a protectiveness determination will be made. Furthermore, long-term protectiveness at the Site requires follow-up actions, including revisions of the decision documents to clarify the remedy; implementation of effective ICs; preparation of a LTS plan; and updating the O&M plan.

Table 4: Status of Recommendations from the 2015 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1/2/ Sitewide	Potential vapor intrusion pathway requires assessment.	Complete a vapor intrusion assessment.	Ongoing	The VI Evaluation is on-going. Both commercial and residential land uses have been assessed based on an approved work plan. However, more work needs to be done.	NA
1/2/ Sitewide	Effective ICs must be implemented.	EPA/State complete ICs evaluation; PRPs implement any additional ICs needed.	Ongoing	Additional ICs have been implemented. Once the IC evaluation is completed then consideration will be given to implementing additional ICs.	NA
1/2/ Sitewide	O&M Plan must be updated, and monitoring, maintenance, and enforcement of ICs is required.	A LTS Plan must be developed and implemented. The O&M plan must be updated.	Under Discussion	While some modifications have been adopted, discussions are underway regarding the development of a formal LTS Plan.	NA
1/2/ Sitewide	Remedy decision documents are not clear regarding several matters. The decision documents do not specifically state whether the cleanup standards will allow for UU/UE, whether ICs are required to ensure long-term protectiveness,	Modify remedy decision documents to address these issues.	Under Discussion	Discussions are underway. Once all the on-going investigations are completed, the necessary modifications to the remedy will be determined and a decision document will be completed.	NA

	and when remedy modifications are acceptable.				

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available by newspaper posting in the *Wausau Daily Herald* (see Appendix E) on 6/28/2019, and it stated that EPA was conducting a FYR and invited the public to submit any comments to EPA. Although EPA received no comments in response to the newspaper notice, EPA has received inquiries over the past few years requesting information from the property owners and the City about potential development of portions of the Site. The results of the review and the report will be made available at the Site information repository located at the Marathon County Public Library, 300 N. First St. Wausau and at the following website: www.epa.gov/superfund/wausau-groundwater.

Data Review

Groundwater remediation at the Wausau Site has been ongoing for over 25 years. Over the years, the concentrations of contaminants in groundwater have been reduced significantly. The aquifer has been monitored on a regular basis, in accordance with approved plans, and shows a downward trend of VOC concentrations. Because of the time necessary to achieve groundwater clean-up goals, containment of contaminated groundwater is the primary measurable and achievable short term objective, but the long-term objective is to achieve full capture of the contaminant plume as well as decrease contaminant concentrations.

The air strippers operated by the City of Wausau for CW3 and CW6 continue to treat water in the deep aquifer on both the east and west side of the Wisconsin River. VOC contamination in groundwater above cleanup standards is still evident at the intakes for both CW3 and CW6, but these levels are significantly lower than the levels in previous years. EPA expects that municipal wells CW3 and CW6 will need to continue to operate as extraction wells for the foreseeable future. Groundwater monitoring at the Site is a combination of hydraulic and water quality monitoring designed to verify that the groundwater extraction wells are containing the contaminant plume and that groundwater quality is improving. The Groundwater Monitoring Plan requires that the PRPs submit an AMR for the activities occurring the previous calendar year. EPA reviewed the AMRs from 2015-2019 for this FYR. A discussion of the groundwater monitoring data follows.

For the purpose of evaluating the effectiveness of the remedy, groundwater monitoring at Wausau has been divided into two areas: the East Bank and the West Bank of the Wisconsin River, which correspond to the two original source areas. The river forms a natural hydraulic division of the Site. During 2019, two groundwater extraction wells were operated to remove VOC contaminated groundwater. One extraction well is located on the West Bank, (CW6), and one is located on the East Bank (CW3) (see Figure 1.2). A third extraction well (EW1) has been off-line for several years,[14] after it became inoperable due to its deteriorating condition. As discussed earlier in the Status of Implementation section, EPA and WDNR agreed to allow a pilot study to take place to determine if the

[14] During the 2015 FYR, EPA found that no immediate public threat was caused by the shut-down of EW1; however, a study was required to determine if EW1 was required to ensure long-term protectiveness.

well was needed for containment of the plume. This well has been off-line since 2012. Although the plume configuration has changed, capture of the plume in that area has not been affected.

Below is information on the contaminant trends and plume capture by the extraction wells for the entire Site from 2015 through 2019, as well as the results of the Pilot Study that evaluated the effects of the shutdown of EW1. The analytical results for each monitoring period can be found in the corresponding AMR and the Pilot Study Report (2019). Also summarized below is information about the on-going VI studies.

2015 through 2019 Groundwater Data Summary

West Bank Groundwater Monitoring Results and Trends

The West Bank Remediation program initially consisted of two extraction wells (EW1[15] and City Well-CW6). It now consists of only City Well CW6 to capture the contaminant plume which is then pumped through the air strippers and the City's municipal treatment plant. The other West Bank MW locations are: R2D, R3D, R4D, C2S, C4S, W52, W53A, W54, W55, W56, WSWD and MW1A. These wells, along with the extraction wells, are sampled annually for the site-specific list of VOCs (see Table 7 in Appendix L). The groundwater monitoring was conducted each fall from 2015 through 2019. Additional groundwater sampling was also conducted for the EW1 Shutdown Pilot Study and the VI Study.

In addition, water level elevations are generally collected annually at the following locations: C3S, C4S, C6S, C7S, GM2S, GM4D, MW1A, MW3A, MW4A, MW7, R1D, R2D, R3D, R4D, W52, W53A, W54, W55, W56, W57, WSWD, CW9-OBS, City Wells CW6, CW9, CW10 and CW11 (if pumping). Groundwater contours from depth to water measurements collected during 2013-2019 are presented in Figure 2 (A-G) in Appendix K.

West Bank Source Area MWs

Graphs showing total chlorinated VOC (CVOC) concentrations over time for certain wells are presented in Figure 4.1 (see Appendix K). Graphs for wells near one of the source areas by Marathon Electric (i.e., W53A, W54, and WSWD) show that increased concentrations occurred at most source area MWs for approximately one year after EW1 stopped operating (July 2012). Since then, source area VOC concentrations decreased to concentrations closer to pre-shut-down levels. However, the exception is W53A where concentrations increased for about 18 months after EW1 shut-down, then decreased to pre-shut-down levels over the next 18 months before increasing again from 2015 to October 2017. The changes in the source area VOC concentrations may be attributed to a combination of several factors, including: changes in the groundwater flow direction; decreased groundwater flux through the source area due to a shallower flow gradient after EW1 shut-down; a higher water table elevation causing the groundwater to contact source material previously above the water table and variations in the amount of precipitation affecting the amount of leachate created. This will continue to be monitored.

West Bank Downgradient MWs

Based on the 2019 monitoring event, the primary CVOC found in the West Bank groundwater continues to be TCE. See Table 4.1 in Appendix L. In 2019, TCE was detected in 11 of the 13 West Bank monitoring wells and in City well CW6. Monitoring wells with TCE concentrations greater than the MCL of 5 µg/L included R2D, R4D, W52, W53A, W54, W55 and WSWD. Wells W53A, W54

[15] However, EW1 was inoperable as an extraction well during the FYR review period of 2015-2019 which is discussed further below regarding the EW1 pilot study.

and WSWD are located on or adjacent to the former landfill on Marathon Electric property (see Figure 1.5 in Appendix K depicting wells locations). R2D, R4D and W55 are located downgradient from Marathon Electric, in the direction of groundwater flow toward CW6. The TCE concentration at CW6 (2.4 µg/L) was the same as the 2018 concentration and was below the MCL.

TCE degradation product, c12DCE, was detected at six locations; however, none of the c12DCE West Bank concentrations exceeded the cleanup standard of 70 µg/L. Neither PCE nor VC were detected in West Bank well samples.

VOC concentrations in the MWs between the source area and CW6 would be expected to increase slightly since EW1 is no longer capturing all of the groundwater near the source area. Review of the graphs for these wells (See Figure 4; Appendix K- W52, R2D, C2S, W55) indicates that concentrations are generally higher, but not significantly so. More recent concentrations for R2D, R3D and W55 suggest that the plume remnant, which was in the stagnation area near R3D, is migrating north toward CW6, as expected. Well R2D is a well screened in the deep aquifer approximately 150 feet north of Marathon property. The decreasing TCE concentrations at this location indicate that the plume remnant (see Table 4 below) that was in a stagnation zone between EW1 and CW6 continues to migrate north to CW6 since EW1 stopped pumping.

Typically, TCE is the only VOC detected at City well CW6. Concentrations at CW6 remain low and have not exceeded the MCL for TCE since 2009 (see graph in Figure 4, Appendix K). VOC concentrations at CW3 on the East Bank have been below the MCL since 2008. Thus, the influent concentrations for both remediation wells, CW3 and CW6, are below the drinking water criteria prior to the air stripping, blending and clarifying performed by the City's treatment plant. None of the reported results for the annual sampling indicate a significant change in the West Bank contaminant plume. The results for the two additional wells related to the shutdown of EW1 were "non-detect". The contours show that the West Bank contaminant plume is within the groundwater containment areas created by the pumping of CW3 and CW6.

North of EW1, the West Bank plume continues to remain in the deeper portion of the aquifer. In 2019, two wells sampled in the north portion of the West Bank plume exceeded the MCL for TCE. W55 had a TCE concentration of 7.7 µg/L, and the TCE concentration at R2D was 10 µg/L. R2D is a deep aquifer well approximately 150 feet north of the Marathon property. The cleanup standard, or MCL, is 5 ug/L. Historically, while EW1 was pumping, there has been a remnant plume area of higher TCE concentrations in the vicinity of monitoring wells R2D and R3D. Recent decreasing TCE concentrations at that location indicate that the plume remnant that was in a stagnation zone between EW1 and CW6 continues to migrate north to CW6 since EW1 stopped pumping. This is supported by the generally increasing concentrations at W55 since 2012 (see W55 trend graph in Figure 3D in Appendix K).

The shut-down of EW1 eliminated the groundwater flow divide between CW6 and EW1, which has resulted in a more effective reduction of VOC concentrations in the R2D/R3D area. The increased concentration at R4D in 2019 may be due to increased infiltration of precipitation in the source area from increased rainfall.[16]

A portion of the impacted groundwater from the old landfill source area that previously was captured by EW1 is migrating north to CW6 and the West Well Field. However, this is not a health concern

[16] 2019 was the wettest year on record in Wausau since 1938, with over 48.1 inches of precipitation, compared to an average of approximately 33.3 inches per year from 1991 through 2018.

because the residual concentrations are low, the water going to the municipal supply wells is treated with air stripping and the influent concentrations of VOCs of water going to the municipal treatment plant are almost non-detect and that is not expected to change. Furthermore, the monitoring programs for the Site remain in place and would detect any changes to this information.

In the southern portion of the plume near the old landfill, CVOCs are more prevalent in the shallow portion of the aquifer. Several monitoring wells south of EW1 exceeded the MCL for TCE near the old landfill source area. TCE concentrations in this area have fluctuated between 5 µg/L to 40 µg/L over the last 20 years. Since 2011, concentrations have increased and range between 54 µg/L to 88 µg/L. This corresponds with the shutdown of EW1 and is likely due to a reduced gradient and groundwater flow velocity in the vicinity of the well. Thus, the increased concentrations observed since 2011 are not likely due to changes within the source area, such as a new source point within the landfill but from less groundwater flux through the area. Figure 4 in Appendix K depicts total CVOCs detected historically. Further, historical and current data for several key wells, R2D, R3D and R4D, are shown below in Table 4 below.

Table 4- West Bank Historical Total Chlorinated VOCs (µg/L)

Year	R4D	R3D	R2D
1996	540	2.0	1600
1997	65	5.0	720
1998	55	580	320
1999	33	1200	110
2000	58	1800	45
2001	13	1500	17
2002	36	1200	15
2003	38	980	10
2004	51	899	11
2005	56.5	400	7.5
2006	42	490	8.2
2007	1.3	280	9.9
2008	13	180	6.5
2009	22.9	92	7.3
2010	25.7	195.7	6.2
2011	27.6	203.1	11
2012	4.9	20.7	6.4
2013	16.6	4.8	20
March 2014	NA	73.7	18.2
May 2014	7.89	4.7	19.1
August 2014	NA	2.9	33.2
November 2014	1.8	2.6	47.2
2015	3.27	1.8	33.6
2016	5.97	2.0	22.9
2017	2.24	2.2	16.7
2018	0.68	2.1	15.9
2019	14	1.1	12.4

Although total CVOCs are shown here, TCE comprises 90 to 100 percent of the concentrations listed. The remaining portion is C12DCE. Review of these data indicates plume migration to the south during the 1990s and 2000s, from the R2D area to the R3D area, as groundwater moved toward EW1. When

EW1 stopped pumping in 2012, VOC concentrations increased at R2D as the aquifer flow direction changed back to the north and toward CW-6. The shut-down of EW1 eliminated the groundwater flow divide between CW-6 and EW1, which has resulted in a more effective reduction of VOC concentrations in the R2D/R3D area[17]. In general, the 2019 data indicate that there is a continued decline of VOC concentrations in the aquifer. Specifically, concentrations have decreased at R2D and R3D. However, concentrations have slightly increased at R4D on the West Bank of the Wisconsin River. The increased concentration at R4D in 2019 may be due to increased infiltration of precipitation in the old landfill (one of the known source areas) due to increased rainfall. However, the increase at well R4D does not impact the protectiveness of the remedy.

VOC concentrations in monitoring wells south of EW1 and adjacent to the old landfill, which is the principal West Bank source area, are more prevalent in the shallower portion of the aquifer. Monitoring wells south of EW1 that exceeded the MCL for TCE included W53A, W54 and WSWD. TCE concentrations at W53A and W54 have exhibited substantial fluctuations since the shutdown of EW1 in 2012. These fluctuations are typical of source area wells where increased precipitation and water level changes could have a local effect on VOC concentrations in the groundwater.

The overall areal extent of the West Bank contaminant plume has changed slightly since EW1 was shut-down and caused the plume to migrate to the East. TCE and C12DCE were the primary VOCs detected downgradient from the old landfill on the West Bank. Figures 4 & 5 in Appendix K present TCE and C12DCE concentrations based on monitoring performed in the fall of 2019. The contour lines on the figures show the approximate areas of concentrations exceeding the MCL.

Summary of Effects of EW1 Shutdown, Pilot Study Summary and Plume Containment

EW1 was installed in 1990 to contain and remove the high VOC concentrations near the West Bank source area within the West Well Field. Concentrations were reduced from thousands of parts per billion to tens of ppb, or less. By 2006, VOC concentrations at EW1 had become asymptotic with total CVOC concentrations less than 10 µg/L (see the EW1 chart in Figure 7 in Appendix J). However, operation of EW1 had continued because VOC concentrations at certain MWs in or near the source area continued to exceed the cleanup standards.

The well became inoperable in 2011. After attempts were made to rehabilitate the EW1, the PRPs requested permission to take EW1 permanently off-line. EPA approved a pilot test to determine if the extraction well was still needed. In 2012, EPA and WDNR approved a pilot study to determine if an extraction well (i.e., EW1) is still necessary in the southern end of the West Bank plume. The Pilot Study was designed to provide data to detect or confirm aquifer conditions in six principal areas, including continued plume containment; continued supply of safe water; facilitation of remediation of the stagnation zone (between EW1 and CW6); continued remediation of the groundwater near the EW1 area and no impact to the East Bank plume. The most critical data relative to the permanent shutdown of EW1 is that the City's remediation wells continue to contain and remove the remaining contaminants in the groundwater. The monitoring was conducted in accordance with the

[17] During the last FYR, in general, that data indicated continued decline of VOC concentrations at R3D and increased concentrations at R2D on the West Bank. This suggests that the remnant of higher concentrations was moving north to CW6.

approved schedule presented in the EW1 Shutdown Pilot Study Work Plan. The Pilot Study Work Plan was approved in 2014 and has been underway since then.

The first EW1 Shutdown Pilot Study Report was submitted in 2015, and it contained information from the Pilot study and data collected through the fall of 2014. After that, EPA requested the pilot study to be extended. To that end, the PRPs agreed to and collected additional data beyond 2015. Since then, multiple rounds of groundwater monitoring were conducted in the fall of each year from permanent MWs, and shallow aquifer samples were collected from seven temporary wells in the spring of 2017. Although concentrations in source area wells continue to fluctuate, downgradient concentrations and the size and shape of the West Bank contaminant plume are stable. All impacted groundwater is contained and captured by the two City of Wausau remediation wells, CW3 and CW6.

The PRPs provided several reports to EPA and WDNR regarding the Pilot Study, including a report in March of 2015, an addendum in 2018 and a final report in 2019. Based on the conclusions presented in the Pilot Study report, data was provided to support the request to permanently shut down EW1. That report is under review by EPA and WDNR. It currently appears that Well EW1 is no longer needed. Review of these data from the inception of the pilot study indicates that concentration trends of VOCs have changed near the West Bank source area, but all impacted groundwater is contained and captured by the two City of Wausau remediation wells, CW3 and CW6. However, the final determination will be made by EPA and WDNR after the review of the report is completed. It is anticipated that a decision will be made by the end of 2020.

In addition, groundwater samples were collected from temporary wells during the VI evaluation on the East Bank and West Bank. The Site Plan, Figure 1.2 (Appendix K), shows the locations of all Site MWs.

Water level data collected since EW1 was shut down in mid-2012, indicate that the VOC plumes on both sides of the river are contained by the pumping of the City water supply/remediation wells CW6 and CW3. The five quarters of water level data collected during the pilot study and the annual monitoring conducted in 2015, 2016 and 2017, confirm that the capture zones created by the City's wells are consistent and effective at containment and removal of the contaminant plumes.

Groundwater contour figures for each quarter during the pilot study, plus fall 2015 and 2016 contours, are provided in Figures 2 (see Appendix K).

The following important conclusions have been made from the Pilot Study Reports:

- Through a combination of more than 25 years of groundwater remediation, source area remediation, ICs and continued hydraulic control and treatment of the remaining plume by CW6 and CW3, the shutdown of EW1 does not appear to create additional exposure risk to human health or the environment.
- The potential for higher VOCs to migrate from west side source areas to the West Well Field has been eliminated by more than 20 years of EW1 operation and SVE remediation of the former municipal landfill.
- EW1 has accomplished its performance goal, which was to prevent the migration of high concentrations of VOCs in the source area groundwater to the West Well Field. Given that the current groundwater VOCs near the former source area are much lower and that EW1 lies within

the capture area of the City's two remediation wells, continued operation of EW1 is not critical relative to the protection of potential groundwater receptors.

- City Treatment Plant sample results do not indicate potential impact due to contaminated groundwater. VOCs in the CW3 and CW6 influent samples are below drinking water standards. The west side plume is captured by CW6 and CW3. CW6 creates a hydraulic barrier to protect the other West Well Field supply wells.
- ICs maintained by the City of Wausau restrict the installation of private wells and can require abandonment of existing wells, although well surveys indicate that there are no private wells near the Site.

Based on the above factors, the PRPs recommended that continued use of EW1 is no longer necessary and permanent shut down of EW1 has been requested. EPA will be making a final decision about this in the coming months; however, it appears that the plume capture does not require EW1 to operate. Additionally, stopping the pumping at EW1 has allowed the groundwater stagnation zone to be captured by the remediation system.

East Bank Groundwater Monitoring Results and Trends

The East Bank Remediation program consisted of one extraction well (City Well - CW3) that captures the contaminant plume, which is then pumped through the air strippers and to the City's municipal treatment plant. This well is monitored annually. The other East Bank MW locations are E21, E22A, E37A, E24AR, MW10B, WW4, WW6, WC3B and WC5A. (See Figure 1 and Figure 1.5 in Appendix K). These wells are sampled annually for a site-specific list of VOCs (see Table 7 in Appendix L). In addition, water level elevations are generally collected annually at the following locations: E21, E22A, E24AR, E26A, E28A, E37A, FVD5, GM6D, W.HURD, MW10B, WC3B, WC4A, WC5A, WC7, WW4, WW6 and CW3. The groundwater monitoring was conducted in the fall of 2015-2019. Additional groundwater sampling was also conducted for the EW1 Shutdown Pilot Study and the VI Study.

East Bank VOC data for 2019 can be found in See Table 4.1 in Appendix L .While PCE was the original contaminant on the East Bank, the presence of TCE, C12DCE, and VC at concentrations exceeding the PCE concentration in many wells in more recent years indicates an active natural biodegradation process. For example, at WW6, the C12DCE concentration was higher than the PCE and TCE concentrations.

Total CVOC concentrations from 2012 through 2019 for key East Bank wells are shown in Table 5 below:

	Table 5-East Bank Total Chlorinated VOCs (µg/L)							
Well	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
WC3B	3.47	0.26	6.31	2.86	0.55	13.4	71.4	480
WC5A	1.3	7.3	14.93	12.04	26.1	118.2	131.7	1.11
E24AR	3.86	22	222.5	136.8	152.1	78.05	6.73	5.18
E22A	25.41	104.9	12.5	8.03	123	21.85	10.22	1.6
E37A	68.06	4.67	3.73	1.61	1.75	3.4	23.41	1.62
WW6	45.48	45.8	51.9	67.6	8.03	8.54	37.6	29.4
CW-3	3.58	2.62	3.03	3.15	3.0	NA	2.83	2.75

Individual VOC concentrations for the shallow wells are presented for PCE, TCE, C12DCE and VC in Figures 4.1 (A-P) (see Appendix K).

In 2019, PCE or one of its daughter products was detected at 7 of the 10 East Bank monitoring wells. Two monitoring wells (WC3B and WW6) had concentrations that exceeded the MCL for at least one VOC. In addition, the VC concentration at E24AR was below the MCL but exceeded the Wisconsin ES of 0.2 µg/L.East Bank contaminant concentrations continue to fluctuate, with increased concentrations in wells at or near the source, lower concentrations in mid-plume wells and increased concentrations farther downgradient at WW6 (see Figure 4 in Appendix K).

Groundwater Beneath the Wisconsin River:

The island wells have not been sampled since 2015 because of consideration for the safety of those persons doing the sampling. Low concentrations of TCE and C12DCE were detected at the island well (IWD) within the river when last sampled in 2015. These detections were then considered remnants of the West Bank plume that had historically migrated beneath the river to CW3.When last sampled in 2015[18], no VOCs were detected in the E21, which is consistent with previous results and indicates that the West Bank plume did not extend all the way across the river. Also, information from that MW is not considered to be vital to prove the remedy is still effective. The PRPs have asked to abandon the MWs in the island, and EPA is reviewing this request.

Hydraulic Capture of Plumes Continues:
Hydraulic capture of the site contaminant plumes is demonstrated by the water table contours illustrated on Figure 2.1 in Appendix L. At nested well locations, the water table elevations for shallow and deep wells were similar, indicating hydraulic containment of the shallow and deeper portions of the aquifer.

Groundwater elevation data is measured annually. Water table contours based on these measurements are presented on Figure 2.1 in Appendix K. On the East Bank, the water levels were measured while CW3, the East Bank remediation well, was operating and on the West Bank while CW6, the West Bank remediation well, was operating.

The East Bank groundwater flow patterns are controlled by the operation of CW3. East Bank groundwater contours indicate a large cone of influence surrounding CW3 that fully captures the East Bank contaminant plume. Under natural conditions, groundwater on the East Bank flows in a south-southwesterly direction towards the Wisconsin River. This flow was observed as recently as the 2017 sampling event when CW3 was not operating because of on-going rehabilitation activities at the time of hydraulic monitoring.

West Bank contours depict a large cone of influence created by CW6 and CW10. Under natural conditions, West Bank groundwater would flow generally eastward and discharge to the Wisconsin River. Under current pumping conditions, however, groundwater flows toward the City supply wells which are then treated in the municipal treatment plant.

Hydraulic capture of the Site contaminant plumes is demonstrated by the water table contours illustrated

[18] Since sampling the well on the island may cause a health and safety issue for the sample collector, sample collection does not occur frequently.

on Figure 2.1 (Appendix K). At nested well locations, the water table elevations for shallow and deep wells were similar, indicating horizontal flow and hydraulic containment of the shallow and deeper portions of the aquifer.

Vapor Intrusion Evaluations

From March 2017 to the present, the PRPs performed additional field work to supplement existing site data in an effort to better understand the potential for VI risk in areas adjacent to the known groundwater plume footprints at the Site. EPA approved a work plan requiring a thorough VI evaluation consisting of additional monitoring of the following: groundwater, exterior soil gas, sub-slab soil gas and indoor air of buildings. Once EPA approved the work plan, two sampling rounds were conducted in March and August of 2017. The PRPs collected sub-slab and indoor air samples at select residential and commercial/industrial buildings on the West Bank and East Bank. Sub-slab and indoor air samples were collected in the West Bank areas on two occasions in March and August 2017. East Bank sub-slab and indoor air sampling has occurred on six occasions from April 2017 through September 2019. Based on those results, EPA has required that additional sampling be conducted, and planning for that work is underway.

Further details regarding these activities are described below. These results will be summarized in a final Vapor Intrusion Report. The draft of this report is currently being reviewed by EPA and WNDR.

East Bank Vapor Probes:
In March 2017, vapor probes were installed at each of the nine East Bank groundwater sampling locations. For locations where the depth to groundwater was greater than 20 feet, vapor sample collection was attempted at several depths. There were nine total shallow probes and seven total deep probes (16 probes total) on the East Bank. Samples were collected using vacuum canisters and were analyzed by the TO-15 method. East Bank vapor analytes include PCE, TCE, c12DCE and VC.

In March 2017, 15 of the vapor probes were successfully sampled in the East Bank area. All 15 probes had detectable VOC concentrations; however, none exceeded their respective residential or small industrial screening levels. In August 2017, the PRPs collected a second round of soil vapor samples from the East Bank probes. Several locations were not sampled due to issues with probes. Of the remaining 12 probes, all had detectable VOC concentrations; however, none exceeded their respective residential or small industrial screening levels.

East Bank Sub-slab and Indoor Air Sampling and Results:
In March 2017, groundwater samples were collected on the East Bank to further delineate the eastern extent of the groundwater plume. Temporary wells were installed at nine locations. Samples from these wells were analyzed for PCE, TCE, c12DCE and VC. While groundwater samples from temporary wells had VOC detections, only 2 temporary wells had VOC concentrations that exceeded the VI screening level for groundwater, and these exceedances were slight. The East Bank groundwater delineation sampling results indicated that the eastern limit of the VOC plume was between N 2nd Street and N. 3rd Street and the southern limit was north of Lincoln Avenue (see Figure 2 in Appendix K).

The initial vapor sampling on the East Bank occurred at five residential properties and one commercial property. Sampling rounds were conducted in April, May and July 2017 and in March 2018. Two to four samples were collected from the six locations and each sample was analyzed using the TO-15 method for PCE, TCE, c12DCE and VC. Based on an additional groundwater result obtained from monitoring

well WW-6 in the fall of 2017, an additional residential property was added to the March 2018 sampling round. Subsequent monitoring events included the commercial properties and one additional residential property. Several properties that EPA targeted to include in the VI investigations have not been sampled due to access denial by the landowner.

EPA/WDNR sub-slab screening levels are included on Table 6 in Appendix L. The residential sub-slab screening level for TCE (70 micrograms per cubic meter (µg/m3)) was exceeded in three of the 18 samples collected, and each of the three exceedances were from a different location. The highest sub-slab TCE concentration was 160 µg/m3. However, three other sub-slab samples from the same location did not exceed 12 µg/m3. The screening levels for PCE and VC were not exceeded in any of the sub-slab samples.

A total of 23 residential indoor air samples were collected from eight homes. The indoor air action levels were not exceeded in any of the samples except for one basement sample that slightly exceeded the TCE action level of 2.1 µg/m3. That result was questionable as an indoor source rather than the VI due to contaminated groundwater. Two subsequent TCE results for that location were below the screening level of 0.28 µg/m3.

West Bank Vapor Probes:

In March 2017, vapor probes were installed at each of the seven West Bank groundwater sampling locations. For locations where the depth to groundwater was greater than 20 feet, vapor samples were attempted to be collected at two levels, one just above the water table and the other at 8.5 to 9 ft. below ground surface (bgs) which is assumed basement depth. At the two locations where the water table was 20 ft. bgs or shallower (W5 and W6), only one sample was collected. These probes were screened from 5.5 to 6 ft. bgs. There were seven total shallow probes and five total deep probes (12 probes total). Samples were collected using vacuum canisters and were analyzed by the TO-15 method. West Bank vapor analytes include TCE, c12DCE, VC, CT and chloroform.

In March 2017, the PRPs collected soil vapor samples from the 12 West Bank probes. All probes had detectable VOC concentrations; however, none exceeded their respective residential or non-residential screening levels. In August 2017, the PRPs collected a second round of soil vapor samples from the 12 West Bank probes. One location was not useable. All of the 11 probes sampled had detectable VOC concentrations; however, none exceeded their respective EPA residential or large industrial screening levels.

West Bank Groundwater Sub-slab, and Indoor Air Sampling and Results:

Potential VI sources on the West Bank are related to shallow groundwater and soils in the former City landfill. On March 2017, groundwater samples were collected adjacent to Marathon Electric building "A" to further delineate the groundwater plume adjacent to and immediately downgradient from the fill area. Additionally, shallow groundwater samples were collected at select locations north of Marathon Electric property to confirm that the shallow aquifer is not impacted in that area. A total of seven temporary wells were installed on the West Bank. Samples from these wells were analyzed for TCE, c12DCE, CT, chloroform and VC. Of the groundwater samples collected from the seven temporary wells on the West Bank, only two samples contained VOCs at detectable concentrations. One of the groundwater samples collected from the West Bank temporary wells had VI screening level exceedances.

The West Bank groundwater delineation sampling results indicated that the VOC plume is primarily within the deeper portion of the aquifer and VOCs in the shallow portion of the aquifer do not extend far from the landfill.

Sub-slab vapor and indoor air sampling was conducted at residential and commercial buildings that were identified as potential VI risks based on their proximity to source areas or elevated groundwater concentrations. The scope of this evaluation included assessments of residential and commercial/industrial buildings for occupancy, construction, basements, ventilation and presence of radon mitigation system. Where access was granted, sub-slab and indoor air locations were sampled at least twice to confirm the initial results.

Sub-slab and indoor air sampling on the West Bank was limited to Marathon Electric property (also known as the Regal property). Groundwater results from residential areas hydraulically downgradient from Marathon Electric revealed that the shallow groundwater is not impacted. Thus, additional VI evaluation of the West Bank residential area is not needed.

Based on the close proximity of Marathon Electric buildings to the former City landfill, sub-slab sampling was performed at six total locations in the two buildings closest to the former landfill. Sub-slab and indoor air sample locations are shown on Figure 4. Two sampling events were performed in March and August 2017. All samples were collected using vacuum canisters, and laboratory analysis was performed using the TO-15 method. West Bank vapor analytes included TCE, c12DCE, CT, chloroform and VC.

For the West Bank sub-slab samples, the vapor data were compared to sub-slab screening levels and indoor air action levels for large industrial buildings. The sub-slab TCE concentrations from the two sampling events exceeded the screening level of 880 µg/m3. Chloroform and CT were also detected in some of the sub-slab samples, but all concentrations were below their respective screening levels. Indoor air samples were collected from one location inside each building. TCE, CT and chloroform were detected in both sampling events, but all concentrations were far below the indoor air action levels for large industrial buildings.

Since the indoor air concentrations did not suggest a health risk to Marathon Electric employees, the PRPs recommended no additional VI evaluation on the West Bank. EPA and WDNR are reviewing this recommendation.

Groundwater VOC concentrations are expected to continue their long-term decline. However, the PRPs will continue evaluating groundwater data, and if concentrations increase in the shallow aquifer, potential additional VI evaluation will be conducted.

Site Inspection

The inspection of the Site was conducted on October 29, 2019. In attendance were Sheri L. Bianchin, RPM for EPA; Matthew A. Thompson, Project Manager, WDNR; and representatives from the PRPs. The purpose of the inspection was to assess the protectiveness of the remedy. The inspection indicated that the no major changes have occurred since 2015. The existing extraction and treatment systems were observed, and these systems continue to operate to ensure that the contamination in the groundwater will not expand or impact any receptors. The air strippers at the City of Wausau municipal utility are well maintained and monitored. The operating systems currently consist of (1) the extraction wells and subsequent aeration; (2) air stripping treatment systems

operating at the City of Wausau water utility plant; and (3) the groundwater monitoring systems. The remedy components are maintained and monitored according to the approved plans.

Adherence to the existing water use restrictions was evidently closely followed. No private wells have been identified in the area of groundwater contamination, and there are City ordinances that have been effective in preventing the installation of wells in the areas near the Superfund Site. See Figure 6 in Appendix K and Appendix G.

The only area of concern noted in the inspection is the old city landfill. The landfill is covered mostly with asphalt paving materials. It appears that these materials do not successfully prevent the infiltration of precipitation. The landfill cover must be improved, and the maintenance procedures must be reviewed.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes, the remedy is functioning as intended by the decision documents; however, the decision documents do not address several current issues at the Site and need to be modified to address these issues.

Question A Summary:

The remedial components included in the 1988 and 1989 RODs have been implemented. Construction and operation of a groundwater treatment system consisting of extraction of groundwater from the aquifers to contain the plumes and treatment by air strippers at the municipal groundwater supply plant are continuing. The SVE systems have been operated and were dismantled when they were found to be no longer needed. All the work has been conducted in accordance with approved work plans. The PRPs have confirmed containment of the contaminant plumes.

Remedial Action Performance

Aquifer remediation is a slow process, but contaminant concentrations have been reduced significantly at the Site. The aquifer has been monitored at least annually, and the data show a downward trend of VOC concentrations in groundwater. Because of the time necessary to achieve groundwater remediation, containment of contaminated groundwater is the primary measurable and achievable short-term objective. In addition, although it is inspected periodically and maintained, the landfill cover does not appear to be fully effective in preventing infiltration of precipitation, which may cause more groundwater contamination. Further, there has been some increase in precipitation during the review period, especially in 2019. This may have caused groundwater contamination to temporarily increase at the Wausau Chemical property due to flushing of soils from the old landfill. The landfill cover is not included as a remedy component in the decision documents, nor is there an RAO for preventing infiltration of precipitation into the landfill. However, recent remedy performance information seems to suggest a remedy component addressing the landfill cover needs to be included in a decision document.

System Operations/O&M

O&M activities consist of operating and maintaining the City production wells, groundwater monitoring wells, and the annual inspection of the paved surfaces near the East Bank source area. The City of Wausau's treatment plant with air strippers regularly operates as an integral part of the City's municipal groundwater system, and the groundwater treatment system must be regularly maintained. The Groundwater Monitoring Plan requires an AMR be provided to EPA and WDNR that contains information on the activities that occurred the previous calendar year. Since the last FYR, several additional modifications were made to the monitoring program, including continuation of a pilot study to monitor and study the effects on the groundwater movement with the shutdown of one of the extraction wells (EW1), and that pilot study has recently been completed. Through a combination of more than 25 years of groundwater remediation, source area remediation, ICs and continued hydraulic control and treatment of the remaining plume by CW6 and CW3, the shut-down of EW1 does not appear to create additional exposure risk to human health or the environment. Based on the study, the PRPs recommended that continued use of EW1 is no longer necessary, and permanent shut down of EW1 has been requested. EPA will be making a final decision about this in the coming months; however, it appears that the plume capture does not require EW1 to operate.

Implementation of Institutional Controls and Other Measures

Although not clearly specified in the RODs[19], ICs are necessary to ensure long-term protectiveness of the remedy. The following ICs have already been put into place:

The Wausau Municipal Code outlines a Wellhead Protection ordinance in Chapter 23.5 and also addresses a Private Water Well ordinance in Chapter 19.30. These controls remain in place and serve with the City of Wausau to protect the remedy and restrict groundwater use. The ordinance has been extremely effective in preventing installation of wells within the City.

A property deed restriction was implemented on the Wausau Chemical facility property to memorialize the completion of the soil remedy on the property. The restriction included a prohibition of inappropriate uses at the Wausau Chemical property to ensure protection of human health and the environment and to protect the remedy. EPA is currently reviewing this instrument. However, given that the City’s water treatment plant is adjacent to the property, the City has a continued presence there and ensures that no trespassing or unexpected uses of the property occur. Further, the property is fenced, and access is limited.

A public notice has been published on the WDNR website (otherwise known as the BRRTs /GIS registry). EPA will also be requesting that WDNR, per its regulations, imposes enforceable site-specific continuing obligations for the property to supplement the existing ICs. Those continuing obligations may include the requirement that only commercial/industrial uses of the property are allowed unless additional cleanup activities occur and that VI must be considered in future development at the Site.

In December 2019, the Wausau Chemical property was sold to the City of Wausau. Title work from that transaction needs to be reviewed by EPA and WDNR.

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Additionally, although EPA has not noted any uses during the recent inspection or through other avenues that would result in disturbances to that area, ICs are needed for the former landfill at the Marathon Electric facility and possibly other areas of the Site.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Yes, the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection are still valid.

Changes in Standards and TBCs

All standards outlined in the 1988 and 1989 RODs and 1989 and 1991 CDs are still valid at the Site. None of the ARARs have changed.

Changes in Toxicity and Other Contaminant Characteristics

During the last FYR, the toxicity value for TCE was under review by EPA and the scientific community. In February 2020, the draft risk evaluation was released for public comments. EPA will monitor the review and take notice of the outcome of this review. Toxicity and other factors for contaminants of concern have not changed since the last FYR.

Changes in Risk Assessment Methods

Risk assessment methodologies have not changed since the last FYR and, therefore, do not call into question the protectiveness of the remedy.

Standardized risk assessment methods have not changed in a way that could affect the protectiveness of the remedy.

Changes in Exposure Pathways

Current or reasonable anticipated future land use has not changed. However, the Site has been considered for redevelopment several times since the 2015 FYR. Proposed future uses include mixed commercial and residential uses. However, all plans are currently on-hold. If there is a proposed change of use in the future, the parties who are requesting the change of use will need to work with EPA and WDNR to ensure that the remedy is still protective in light of proposed land use changes. This may require future work (not publicly funded) and the need to update the RODs.

During the last FYR, it was determined that VI was of concern and required further evaluation.

Pursuant to the WDNR voluntary cleanup initiative, Wausau Chemical Company proposed a focused site investigation to better understand the residual contamination at the Site, including any VI, and for possible redevelopment of the Site. That report was submitted in April 2015. In 2015, EPA also required a formal VI work plan, which was approved in 2017. Since then, VI assessments have occurred, and additional VI assessments are underway. In summary, it has been determined that VOC vapors have been detected in sub-slab samples at several locations (both commercial and residential) that exceed appropriate screening levels. However, no exceedances have been detected in indoor air with one exception, and that single detection was slightly over the screening level. That may be an anomaly since the detection was found in a basement where similar chemicals may have been used. Furthermore, the area where the exceedance was detected has been resampled several times, with no detected indoor air exceedances.

Expected Progress Towards Meeting RAOs

The remedy performance is progressing as expected, and it is anticipated to continue to do so. Contaminant levels in groundwater are generally decreasing. Groundwater monitoring is conducted in accordance with the procedures contained in the approved monitoring plan.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. other information has become available that might call into question the remedy for Wausau Groundwater Site. Furthermore, there are no known direct impacts to the Site from the natural disasters or vulnerabilities related to climate change.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU1/OU2/ Sitewide	**Issue Category: Remedy Performance**			
	Issue: Potential vapor intrusion pathway requires assessment.			
	Recommendation: Complete a vapor intrusion assessment.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Unknown	Yes	PRP	EPA/State	12/31/2021

OU(s): OU1/OU2/ Sitewide	**Issue Category: Institutional Controls**			
	Issue: Effective ICs must be implemented.			
	Recommendation: EPA/State complete ICs evaluation; PRPs will implement any additional ICs needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2021

OU(s): OU1/OU2/ Sitewide	Issue Category: Institutional Controls			
	Issue: Effective ICs must be implemented.			
	Recommendation: EPA/State complete ICs evaluation; WDNR will implement continuing obligations. Consideration will be given to instituting other ICs if needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA/State	12/31/2021

OU(s): OU1/OU2/ Sitewide	Issue Category: Institutional Controls			
	Issue: O&M Plan must be updated and monitoring, maintenance, and enforcement of ICs is required.			
	Recommendation: A LTS Plan must be developed and implemented. The O&M plan must be updated.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	12/31/2021

OU(s): OU1/OU2/ Sitewide	Issue Category: Remedy Performance			
	Issue: Remedy decision documents are not clear regarding several matters. The decision documents do not specifically state whether the cleanup standards will allow for UU/UE, whether ICs are required to ensure long-term protectiveness, and when remedy modifications are acceptable.			
	Recommendation: Modify remedy decision documents to address these issues.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA	3/31/2023

OU(s): OU1/OU2/ Sitewide	Issue Category: Remedy Performance			
	Issue: Several remedy operation modification requests have been submitted for approval to EPA and WDNR. These include permanently shutting down EW1 and allowing the shutdown of the air stripper for CW3, which is associated with the planned move of the municipal water treatment plant.			
	Recommendation: EPA/WDNR must review these proposals and either approve them, request additional information, or deny these requests, and determine if any formal remedy modifications are needed in the decision documents.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/31/2022

OU(s): OU1/OU2/ Sitewide	Issue Category: Remedy Performance			
	Issue: Remedy decision documents are not clear regarding the remedy cover requirements for the old landfill. The landfill is covered mostly with asphalt paving materials which do not successfully prevent the infiltration of precipitation, which may cause more groundwater contamination. The landfill cover must be improved and placed on a regular maintenance schedule.			
	Recommendation: EPA/WDNR must determine what additional measures are necessary for the old landfill to ensure the remedy is protective in the long-term and modify the decision documents to include these remedies to ensure prevention of infiltration of precipitation.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	3/31/2023

VII. PROTECTIVENESS STATEMENT

OU1, OU2 & Sitewide Protectiveness Statement	
Protectiveness Determination: Protectiveness Deferred	*Planned Addendum Completion Date:* 3/31/2022
Protectiveness Statement: A protectiveness determination of the remedy for the Wausau Ground Water Contamination Site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following action: Complete additional VI assessments. It is expected that	

this action will take approximately two years to complete, at which time a protectiveness determination will be made.

VIII. NEXT REVIEW

The next FYR report for the Wausau Ground Water Contamination Superfund Site is required five years from the completion date of this review.

Appendix A

Existing Site Information / Chronology

APPENDIX A – REFERENCE LIST

A. SITE CHRONOLOGY

Table 5: Site Chronology

Event	Date
Initial discovery of problem or contamination	1982
Removal actions	1984
Pre-NPL responses- Treatment system installed by Wisconsin	1985
Proposed NPL listing	1985
Final NPL listing	1986
Remedial Investigation/Feasibility Study initiated	1987
Remedial Investigation/Feasibility Study completed	1989
Interim ROD signature	1988
Final ROD signature	1989
RD/RA CD for Interim ROD	1989
RD/RA CD for Final ROD	1991
Remedial design start	1990
RA Construction completion	1994
Remedy Construction completion date	1994
West Bank Side SVE system shut down	1996
First Five-Year Review	1996
EPA approves discontinuation of SVE (West Bank Side)	1996
EPA approves discontinuation of SVE (East Bank Side)	1997
Second Five-Year Review	2000
Third Five-Year Review	2005
Fourth Five-Year Review	2010
Pilot Study Begins	2013
Fifth Five-Year Review	2015

B. BACKGROUND

Physical Characteristics

Wausau, Wisconsin is located in the north central portion of the state along both sides of the Wisconsin River. The Wausau Groundwater Contamination Site encompasses an area in the northern section of the city and includes the drinking water well field (and all the production wells). The extent of the area of concern for the Site includes both industrial and residential areas. The City of Wausau provides drinking water for approximately 39,000 people. Several site location maps are shown on Figures 1, 1.1, 1.2 and 1.3 in Appendix K.

Land and Resource Use

Historically, there were two areas of concern that are associated with the Wausau Groundwater Site. The first area is a Marathon Electric Corporation property along the West Bank of the Wisconsin River, which includes a closed former municipal landfill. The second area is the Wausau Chemical facility located along the East Bank of the river. A site plan is presented on Figure 1.2 in Appendix K. A site schematic is shown on Figure 1.3 in Appendix K.

Site Geology and Hydrology

The Site is underlain by glacial outwash and alluvial sediments that have filled in the pre-glacial stream valley in which the Wisconsin River now flows. This alluvial aquifer ranges from 0 to 160 feet thick and has an irregular base and lateral boundaries. The relatively impermeable bedrock that underlies the aquifer and forms its lateral boundaries within the pre-glacial valley defines the boundaries of the aquifer. Six production wells in the Site area provide drinking water for the City of Wausau. These wells are screened in the glacial outwash and alluvial sand and gravel deposits that underlie and are adjacent to the Wisconsin River.

Under natural conditions, groundwater would flow toward and discharge to the Wisconsin River and its tributary, Bos Creek. Under remedial pumping conditions, however, groundwater flowed toward EW1 and the production wells. The operation of EW1 created groundwater flow divides between the west and east City well fields and isolated from the production wells the former landfill, which is a source of contaminated groundwater. Since the pilot shutdown of EW1 in July 2012, however, groundwater flows toward the City production wells. This is not a problem since the water is captured by the City's wells and treated in the treatment plant.

History of Contamination

In 1982, three of Wausau's deep aquifer water production wells (CW3, CW4 and CW6) were found to be contaminated with VOCs. The primary contaminants were PCE, TCE and l,2- DCE. EPA awarded the City of Wausau a federal grant in 1983 for design and installation of packed-tower VOC air strippers for water supply treatment. However, as high VOC levels persisted, EPA's emergency response team was called in 1984 to install a granular activated carbon (GAC) treatment system at CW6 until the air strippers for CW3 and CW6 were completed later that year. At that point, CW4 was used only occasionally during peak periods until 1989. CW4 was decommissioned when new production well CW10 went on-line.

As described below, EPA issued two RODs to remediate the sources of contamination and ensure that human health and the environment are protected.

Initial Response

In 1985, a groundwater extraction system with air stripping treatment (required by the State of Wisconsin) began operating at the Wausau Chemical facility. The system consisted of a series of extraction wells in the shallow portion of the aquifer at the south end of the Wausau Chemical property. The Wausau Chemical groundwater system operated until 1996, when it was shut down and abandoned.

Basis for Taking Action

Remedial planning began at Wausau Groundwater as the Site was proposed for the National Priorities List (NPL) on April 10, 1985. The Site became a final NPL listing on June 10, 1986. A two-phase RI was carried out from August 1987 to September 1988. As noted in the 1989 RI Report, the City's production wells were located in a wedge-shaped aquifer composed of glacial outwash materials deposited within the pre-glacial bedrock river valley of the Wisconsin River, and the aquifer was the sole-source of potable water for the City of Wausau.

Two separate sources of contamination were identified within the zone of influence of the City's production wells. The first source was a former municipal landfill located south of CW6 on the Marathon Electric property in the west study area. The second source was the Wausau Chemical facility located between CW3 and CW4 in the east study area.

Three plumes of contamination were found within the zone of influence of the City's production wells. The first was composed primarily of TCE and was emanating from the former municipal landfill. This plume was found to split at the boundary of the source area, with one leg migrating north to CW-6 and the second leg migrating under the river to CW3. The second plume originated from the southern boundary of the Wausau Chemical property and impacted both CW3 and CW4. This plume was comprised primarily of PCE but contained other VOCs as well. The third plume originated from the northern boundary of the Wausau Chemical property and was impacting CW3. This contamination in the plume was comprised primarily of PCE.

Soils at both source areas were contaminated with VOCs. The soils in the vicinity of the former municipal landfill were contaminated primarily with TCE. Soils on the Wausau Chemical property were contaminated primarily with PCE, along with other VOCs.

During the RI/FS, several important potential exposure pathways were identified for the Site. Potential health risks were evaluated for the following exposure pathways and potentially exposed population: (1) residents using municipal water exposed to contaminant concentrations equal to the laboratory detection limits of 0.5 *ug/l* for PCE and TCE and 1.0 *ug/1* for DCE and (2) hypothetical users of private well water, assuming a private well is installed within the contaminated aquifer in the future. It was assumed that a user would be exposed to the highest concentrations found in groundwater, approximately 4300 *ug/l,* to obtain the worst-case for this exposure scenario. FS reports that evaluated remedial alternatives based on the findings of the two phases of the RI were completed in September 1988 and August 1989. EPA issued an interim ROD in December 1988 that called for a groundwater pump and treatment system to address the contaminant plume emanating from the former municipal landfill. A final ROD, which incorporated the interim ROD with remedy objectives for the Wausau Chemical source areas and plumes, was signed in September 1989.

Remedy Selection/ Remedy Implementation

The Site was managed under 2 RODs.

Following are the RAOs of the 1988 ROD for OU 1 (Interim Action ROD):

1) Prevent exposure to contaminated drinking water from groundwater supply wells located within the contaminant plume threatening the West Well Field; and

2) Protect the West Well Field from future increased levels of contamination.

The response actions outlined for the Wausau Groundwater Site in the December 1988 interim ROD included the following remedial components:

1) Construction and operation of a treatment system for removal of contaminants;

2) Installation of a groundwater extraction well located in the southern portion of the west contaminant plume;

3) Discharge of treated water to the Wisconsin River;

4) Installation of additional wells, as necessary; and

5) Preparation of an O&M monitoring program.

The selected remedy established cleanup levels for the contaminants of concern in groundwater based on the Safe Drinking Water Levels (MCLs) and the Wisconsin Administrative Rule chapter NR 140 for groundwater protection.

The RAOs of the 1989 ROD for OU 2 (Final ROD) were to address the remaining concerns at the Site following implementation of the Interim Action and included:

1) Elimination of the continued sources of groundwater contamination identified as the former City landfill / Marathon Electric property and the Wausau Chemical property; and

2) Prevention of exposure to contaminants present in the two additional groundwater contaminant plumes identified.

The response actions outlined for the Wausau Groundwater Site in the September 1989 final ROD include the following additional components:

1) Construction and operation of SVE systems to remove volatile contaminants from soils at each of the identified source areas;

2) Treatment of off-gases from the SVE system operation using vapor phase carbon units, which would be regenerated off-site;

3) Groundwater remediation utilizing the City's municipal wells and existing air strippers for removal of contaminants from plumes affecting the wells; and

4) Monitoring of groundwater and soil. The soils were cleaned up with the goal of protecting groundwater.

All the remedy components required by the RODs have been put in-place and are either still operating or are completed.

Interim Action

A CD which describes how the remedial actions outlined in the December 1988 interim ROD will be funded and implemented was entered in U.S. District Court in September 1989. The PRPs who have agreed to perform the work at the Site are the Settling Defendants. The contractor hired by the Settling Defendants (Wausau PRP Group) completed the remedial design (RD) for the remedial actions in March 1990. On-site construction began in June 1990, with the installation of a 16-inch diameter extraction well screened over the bottom 40 feet of the aquifer. The extraction well is located at the north boundary of the former municipal landfill and was originally pumped at the rate of 1600 gallons per minute (gpm). The pumping rate was later reduced to 850 gpm following a determination that the higher rate created a groundwater zone of influence that extended too far to the south. A pump house with an associated main and piping was installed to facilitate treatment and discharge of the extracted groundwater. The groundwater was pumped from the well to the pump house and was discharged to a manhole storm sewer leading to a fenced, rip rap, outfall structure designed to enhance volatilization prior to final discharge into the Wisconsin River. The discharge was required to meet the substantive requirements of the Wisconsin Pollution Discharge Elimination System (WPDES) permit issued by the WDNR. In October 1990, a final inspection of the interim remedy was completed by EPA.

Additional groundwater remediation was provided by an extraction system operated as an interim remediation measure by Wausau Chemical between 1985 and 1996. The extraction system at Wausau Chemical consisted of a series of shallow wells at the south end of the Wausau Chemical property. Groundwater was treated by air stripping. This system was not part of the ROD or the CD. Operation of the system ceased in 1996.

Final Remedial Action

The final remedial action (RA) at the Site consists of two SVE systems to address the source areas and groundwater extraction and treatment utilizing existing municipal production wells and an extraction well. A CD which described how the remedial actions set forth in the September 1989 final ROD were to be funded and implemented was entered in U.S. District Court in January 1991. The contractor hired by the Wausau PRP group completed the RD for the RA in June 1993.

Source Area Remediation

Contaminated soil and groundwater leachate were addressed by the former SVE systems, one at the East Bank and one at the West Bank. Soil remedial objectives included the following: (1) elimination of any excess groundwater leachate; (2) prevention of direct contact with contaminated soils and (3) prevention of ingestion and inhalation human health risks by treatment of contaminated soils. Soil clean up levels for the Site were determined using a groundwater leachate model to eliminate additional risks for groundwater contamination.

Source area remediation was accomplished by the installation of SVE systems at Marathon Electric (West Bank) and Wausau Chemical (East Bank) in January 1994. Off-gas treatment was provided by vapor phase carbon. Construction for the final site remedy began in October 1993 with the installation of the two separate SVE systems. One system was located in the vicinity of the closed landfill on the west side of the Wisconsin River and included two extraction wells. The second SVE system was located on Wausau Chemical property on the east side of the river and originally included four wells. Two additional extraction wells were later added to the east side SVE system. As discussed below in more detail, EPA and WDNR approved the completion of the soil remedy for both areas at the Wausau Groundwater Site. The SVE wells were screened from five feet below grade to the water table, and the off-gas systems consisted of two activated carbon canisters with a sampling port in between.

Soil Remediation at Wausau Chemical-East Bank

The SVE system at the south loading dock (aka drum storage area) on the Wausau Chemical property is also known as the East Bank system. It operated from 1994 to 2001. The SVE system was necessary to remediate the source area contamination which was contributing to a VOC plume in the groundwater. The PRPs submitted a Mid-Point of Operations Report for the SVE systems in October 1995. In April 1996, after confirmatory soil samples were taken to assure soil clean up levels were achieved, EPA approved a shutdown of the SVE system on the west side of the Wisconsin River and a shutdown of the two northern SVE wells on the east side of the river. Operation of four SVE wells in the southern portion of the system on the east side of the river continued at that time, although volatile organic soil contamination had decreased substantially in that area. In 1997, a draft SVE System closure report was submitted by the PRPs. However, EPA and WDNR expressed concern that these areas had elevated levels relative to the area as a whole. The system continued to operate until 2001. The PRPs sent a letter requesting permanent shut down of the SVE system in March 2002. EPA and WDNR requested confirmation soil and groundwater sampling, which was completed and reported in March 2004. After discussions between the WDNR and EPA, it was decided that final closure of the SVE system would be granted once a deed restriction imposing industrial property controls was implemented and recorded against the Wausau Chemical property. Closure maybe granted by the State of WI under ch. NR 726, WI Administrative Code (WAC) if it is shown that groundwater contaminant concentrations are stable or declining. The WDNR issued a closure letter in April 1996 stating the property owner had met the conditions required for final closure, including maintenance of the concrete barrier and implementation and recording of a deed restriction advising of the presence of residual contamination. On April 26, 2007, Marathon County recorded a deed restriction for the Wausau Chemical property. On August 29, 2007,

the PRPs requested final closure of the SVE system and completion of the source area remediation. The EPA and WDNR approved final closure of the East Bank source remediation system in September 2007. EPA approved the request in a letter dated September 26, 2007. A requirement of the closure plan was an annual inspection of the paved areas surrounding the Wausau Chemical property, as described in the Pavement Cover and Building Maintenance Plan.

The purpose of the annual inspection is to inspect the integrity of the paved areas of the property and make recommendations as needed to minimize rainwater infiltration and prevent direct human contact with soils. In September 2008, the SVE wells and soil gas probes that had comprised the soil gas extraction and monitoring system for the East Bank SVE system were abandoned according to WDNR requirements. At the same time, the fifteen shallow groundwater extraction wells at the south side of the Wausau Chemical property were also abandoned. The recorded deed restrictions and Pavement Cover and Building Maintenance Plan must still be reviewed by EPA and WDNR. Copies of the abandonment forms for the SVE wells, gas probes and groundwater extraction wells can be found in the annual reports.

Soil Remediation at the former Wausau City Landfill West Bank

The SVE system operated from 1994 to 1996 on the former Wausau City Landfill at the Marathon Electric property and is known as the West Bank system. The SVE system at Marathon Electric operated until April 1996, when the West Bank source remediation was approved as complete. In April 1996, after confirmatory soil samples were taken to assure soil clean up levels were achieved, EPA approved shut down of the SVE system on the west side of the Wisconsin River and shutdown of the two northern SVE wells on the east side of the river. Operation of four SVE wells in the southern portion of the system on the east side of the river continued at that time, although volatile soil contamination had decreased substantially in that area. The East Bank SVE system was modified in 1996 and continued to operate. In January 2001, the East Bank system was shut down while evaluation for final closure occurred. In 2007, EPA acknowledged that the East Bank source was complete. The SVE system at Marathon Electric operated until April 1996, when EPA approved as complete the West Bank source remediation. WDNR approved the closure of the West Bank SVE system in 2006.

Appendix B

Background

APPENDIX B – BACKGROUND

Physical Characteristics

Wausau, Wisconsin is located in the north central portion of the state along both sides of the Wisconsin River. The Wausau Groundwater Contamination Site encompasses an area in the northern section of the city and includes the drinking water well field (and all the production wells). The extent of the area of concern for the Site includes both industrial and residential areas. The City of Wausau provides drinking water for approximately 39,000 people. Several site location maps are shown on Figures 1, 1.1, 1.2 and 1.3 in Appendix K.

Land and Resource Use

Historically, there were two areas of concern that are associated with the Wausau Groundwater Site. The first area is a Marathon Electric Corporation property along the West Bank of the Wisconsin River, which includes a closed former municipal landfill. The second area is the Wausau Chemical facility located along the East Bank of the river. A site plan is presented on Figure 1.2 in Appendix K. A site schematic is shown on Figure 1.3 in Appendix K.

Site Geology and Hydrology

The Site is underlain by glacial outwash and alluvial sediments that have filled in the pre-glacial stream valley in which the Wisconsin River now flows. This alluvial aquifer ranges from 0 to 160 feet thick and has an irregular base and lateral boundaries. The relatively impermeable bedrock that underlies the aquifer and forms its lateral boundaries within the pre-glacial valley defines the boundaries of the aquifer. Six production wells in the Site area provide drinking water for the City of Wausau. These wells are screened in the glacial outwash and alluvial sand and gravel deposits that underlie and are adjacent to the Wisconsin River.

Under natural conditions, groundwater would flow toward and discharge to the Wisconsin River and its tributary, Bos Creek. Under remedial pumping conditions, however, groundwater flowed toward EW1 and the production wells. The operation of EW1 created groundwater flow divides between the west and east City well fields and isolated from the production wells the former landfill, which is a source of contaminated groundwater. Since the pilot shutdown of EW1 in July 2012, however, groundwater flows toward the City production wells. This is not a problem since the water is captured by the City's wells and treated in the treatment plant.

History of Contamination

In 1982, three of Wausau's deep aquifer water production wells (CW3, CW4 and CW6) were found to be contaminated with VOCs. The primary contaminants were PCE, TCE and l,2- DCE. EPA awarded the City of Wausau a federal grant in 1983 for design and installation of packed-tower VOC air strippers for water supply treatment. However, as high VOC levels persisted, EPA's emergency response team was called in 1984 to install a granular activated carbon (GAC) treatment system at CW6 until the air strippers for CW3 and CW6 were

completed later that year. At that point, CW4 was used only occasionally during peak periods until 1989. CW4 was decommissioned when new production well CW10 went on-line.

As described below, EPA issued two RODs to remediate the sources of contamination and ensure that human health and the environment are protected.

Initial Response

In 1985, a groundwater extraction system with air stripping treatment (required by the State of Wisconsin) began operating at the Wausau Chemical facility. The system consisted of a series of extraction wells in the shallow portion of the aquifer at the south end of the Wausau Chemical property. The Wausau Chemical groundwater system operated until 1996, when it was shut down and abandoned.

Basis for Taking Action

Remedial planning began at Wausau Groundwater as the Site was proposed for the National Priorities List (NPL) on April 10, 1985. The Site became a final NPL listing on June 10, 1986. A two-phase RI was carried out from August 1987 to September 1988. As noted in the 1989 RI Report, the City's production wells were located in a wedge-shaped aquifer composed of glacial outwash materials deposited within the pre-glacial bedrock river valley of the Wisconsin River, and the aquifer was the sole-source of potable water for the City of Wausau.

Two separate sources of contamination were identified within the zone of influence of the City's production wells. The first source was a former municipal landfill located south of CW6 on the Marathon Electric property in the west study area. The second source was the Wausau Chemical facility located between CW3 and CW4 in the east study area.

Three plumes of contamination were found within the zone of influence of the City's production wells. The first was composed primarily of TCE and was emanating from the former municipal landfill. This plume was found to split at the boundary of the source area, with one leg migrating north to CW-6 and the second leg migrating under the river to CW3. The second plume originated from the southern boundary of the Wausau Chemical property and impacted both CW3 and CW4. This plume was comprised primarily of PCE but contained other VOCs as well. The third plume originated from the northern boundary of the Wausau Chemical property and was impacting CW3. This contamination in the plume was comprised primarily of PCE.

Soils at both source areas were contaminated with VOCs. The soils in the vicinity of the former municipal landfill were contaminated primarily with TCE. Soils on the Wausau Chemical property were contaminated primarily with PCE, along with other VOCs.

During the RI/FS, several important potential exposure pathways were identified for the Site. Potential health risks were evaluated for the following exposure pathways and potentially exposed population: (1) residents using municipal water exposed to contaminant concentrations equal to the laboratory detection limits of 0.5 *ug/l* for PCE and TCE and 1.0 *ug/1* for DCE and

(2) hypothetical users of private well water, assuming a private well is installed within the contaminated aquifer in the future. It was assumed that a user would be exposed to the highest concentrations found in groundwater, approximately 4300 *ug/l,* to obtain the worst-case for this exposure scenario. FS reports that evaluated remedial alternatives based on the findings of the two phases of the RI were completed in September 1988 and August 1989. EPA issued an interim ROD in December 1988 that called for a groundwater pump and treatment system to address the contaminant plume emanating from the former municipal landfill. A final ROD, which incorporated the interim ROD with remedy objectives for the Wausau Chemical source areas and plumes, was signed in September 1989.

Remedy Selection/ Remedy Implementation

The Site was managed under 2 RODs.

Following are the RAOs of the 1988 ROD for OU 1 (Interim Action ROD):

1) Prevent exposure to contaminated drinking water from groundwater supply wells located within the contaminant plume threatening the West Well Field; and

2) Protect the West Well Field from future increased levels of contamination.

The response actions outlined for the Wausau Groundwater Site in the December 1988 interim ROD included the following remedial components:

1) Construction and operation of a treatment system for removal of contaminants;

2) Installation of a groundwater extraction well located in the southern portion of the west contaminant plume;

3) Discharge of treated water to the Wisconsin River;

4) Installation of additional wells, as necessary; and

5) Preparation of an O&M monitoring program.

The selected remedy established cleanup levels for the contaminants of concern in groundwater based on the Safe Drinking Water Levels (MCLs) and the Wisconsin Administrative Rule chapter NR 140 for groundwater protection.

The RAOs of the 1989 ROD for OU 2 (Final ROD) were to address the remaining concerns at the Site following implementation of the Interim Action and included:

1) Elimination of the continued sources of groundwater contamination identified as the former City landfill / Marathon Electric property and the Wausau Chemical property; and

2) Prevention of exposure to contaminants present in the two additional groundwater contaminant plumes identified.

The response actions outlined for the Wausau Groundwater Site in the September 1989 final ROD include the following additional components:

1) Construction and operation of SVE systems to remove volatile contaminants from soils at each of the identified source areas;

2) Treatment of off-gases from the SVE system operation using vapor phase carbon units, which would be regenerated off-site;

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Appendix C

Documents Reviewed in Preparation of the Sixth FYR

for the Wausau Groundwater Contamination Site

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Documents Reviewed in preparation of the Sixth FYR for the Wausau Groundwater Contamination Site include the following:

1; Five-year Review Reports: 7/10/00, 6/13/05, 4/9/10; 4/9/2015 U.S. EPA
2. RD/ RA Consent Decrees: January 1991 & September 1989; U.S. EPA
3. Record of Decisions: September 1989 & December 1988; U.S. EPA

Reports Submitted Since Previous Five-Year Review Report
4. AMRs Wausau Groundwater Site file, VI Reports and O&M documents.

Appendix D

Five-Year Review Checklist and List of Participants on Five-year Review Inspection

Site Inspection Checklist

I. SITE INFORMATION	
Site name: **Wausau GW Contamination Site**	**Date of inspection:** **10/29/2019**
Location and Region: **Wausau, WI; Region 5**	**EPA ID:** **WID 980993521**
Agency, office, or company leading the FYR: U.S. EPA	**Weather/temperature:** 40 degrees F

Remedy Includes: (Check all that apply)

☒ Landfill cover/containment	☐ Monitored natural attenuation
☒ Access controls	☒ Groundwater containment
☒ Institutional controls	☐ Vertical barrier walls
☒ Groundwater pump and treatment	☒ Other: Treatment via Air Strippers
☐ Surface water collection and treatment	

Attachments:

☒ Inspection team roster attached	☐ Site map attached

Site Inspection Checklist

II. INTERVIEWS (Check all that apply)
1. **O&M Site Manager** **Chuck Ahrens,** **Project Manager,** Click or tap to enter a date. Interviewed: ☒ at site ☐ at office ☐ by phone Phone Number: Click here to enter text. Problems, suggestions: ☐ Report attached Click or tap here to enter text.
2. **O&M Staff** Name , Title , Click or tap to enter a date. Interviewed: ☐ at site ☐ at office ☐ by phone Phone Number: Click here to enter text. Problems, suggestions: ☐ Report attached Click or tap here to enter text.
3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. Agency: WDNR Contact: Matt Williams, Project Manager, Click or tap to enter a date., P: Phone Number Problems, suggestions: ☐ Report attached Click or tap here to enter text. Agency: Click or tap here to enter text. Contact: Name , Title , Click or tap to enter a date., P: Phone Number Problems, suggestions: ☐ Report attached Click or tap here to enter text. Agency: Click or tap here to enter text. Contact: Name , Title , Click or tap to enter a date., P: Phone Number Problems, suggestions: ☐ Report attached Click or tap here to enter text. Agency: Click or tap here to enter text. Contact: Name , Title , Click or tap to enter a date., P: Phone Number Problems, suggestions: Click or tap here to enter text.
4. **Other Interviews (optional):** ☐ Report attached Click or tap here to enter text.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1. O&M Documents			
☒ O&M manual	☒ Readily available	☐ Up to date	☐ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☐ Up to date	☐ N/A
Remarks: Click or tap here to enter text.			
2. Site-Specific Health and Safety Plan		☐ Readily available	
☐ Contingency Plan/Emergency Response Plan		☐ Readily available	
Remarks: Click or tap here to enter text.			
3. O&M and OSHA Training Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			
4. Permits and Service Agreements			
☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: Click or tap here to enter text.			
Remarks: Click or tap here to enter text.			
5. Gas Generation Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			
6. Settlement Monument Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			
7. Groundwater Monitoring Records			
	☒ Readily available	☐ Up to date	☐ N/A
Remarks: Click or tap here to enter text.			
8. Leachate Extraction Records			
	☐ Readily available	☐ Up to date	☒ N/A
Remarks: Click or tap here to enter text.			

9. Discharge Compliance Records

☐ Air	☐ Readily available	☐ Up to date	☐ N/A
☒Water (effluent)	☒ Readily available	☐ Up to date	☐ N/A

Remarks: On website

10. Daily Access/Security Logs

☐ Readily available ☐ Up to date ☐ N/A

Remarks: Click or tap here to enter text.

IV. O&M COSTS

1. O&M Organization

☐ State in-house ☐ Contractor for State

☐ PRP in-house ☒ Contractor for PRP

☐ Federal Facility in-house ☐ Contractor for Federal Facility

Remarks: Click or tap here to enter text.

2. O&M Cost Records

☒Readily available ☒ Up to date ☐ Funding mechanism/agreement in place

Original O&M cost estimate Click or tap here to enter text. ☐ Breakdown attached

Total annual cost by year for review period if available

From	To	Total cost	
Click or tap to enter a date.	Click or tap to enter a date.	Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached
From Click or tap to enter a date.	To Click or tap to enter a date.	Total cost Click or tap here to enter text.	☐ Breakdown attached

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons:

Click or tap here to enter text.

V. ACCESS AND INSTITUTIONAL CONTROLS

☐ Applicable ☐ N/A

1. Fencing Damaged ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks: Click or tap here to enter text.

2. Other Access Restrictions ☐ Location shown on site map ☐ Gates secured

Remarks: Click or tap here to enter text.

3. Institutional Controls (ICs)

A. Implementation and Enforcement

Site conditions imply ICs not properly implemented	☐ Yes	☒ No	☐ N/A
Site conditions imply ICs not being fully enforced	☒ Yes	☐ No	☐ N/A
Type of monitoring (*e.g.*, self-reporting, drive by)	Click or tap here to enter text.		
Frequency	Click or tap here to enter text.		
Responsible party/agency	Click or tap here to enter text.		

Contact: Name , Title , Click or tap to enter a date., P: Phone Number

Reporting is up-to-date	☐ Yes	☐ No	☐ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☐ N/A
Specific requirements in deed or decision documents have been met	☐ Yes	☐ No	☐ N/A
Violations have been reported	☐ Yes	☐ No	☐ N/A

Other problems or suggestions:

ICIAP needs to be completed

B. Adequacy ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: Click or tap here to enter text.

4. General

A. Vandalism/Trespassing ☐ Location shown on site map ☐ No vandalism evident

Remarks: Click or tap here to enter text.

B. Land use changes on site ☐ N/A

Remarks: Click or tap here to enter text.

C. Land use changes off site ☐ N/A

Remarks: Click or tap here to enter text.

VI. GENERAL SITE CONDITIONS

1. Roads ☐ Applicable ☐ N/A

A. Roads damaged ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: Click or tap here to enter text.

B. Other Site Conditions

Remarks: Click or tap here to enter text.

VII. LANDFILL COVERS

1. Landfill Surface ☒ Applicable ☐ N/A

A. Settlement (Low Spots) ☐ Location Shown on Site Map ☒ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Cracks ☐ Location Shown on Site Map ☒ Cracking Not Evident

Lengths: Click or tap here to enter text. Widths: Click or tap here to enter text. Depths: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Holes ☐ Location Shown on Site Map ☐ Holes Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

E. Vegetative Cover ☐ Grass ☐ Cover Properly Established

☐ Tress/Shrubs (indicate size and locations on a diagram ☐ No Signs of Stress

Remarks: Some upgrade is needed

F. Alternative Cover (armored rock, concrete, etc.) ☐ N/A

Remarks: asphalt road which contains some cracks

G. Bulges ☐ Location Shown on Site Map ☒ Bulges Not Evident

Areal Extent: Click or tap here to enter text. Height: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

H. Wet Areas/Water Damage ☒ Wet Areas/Water Damage Not Evident

☐ Wet Areas ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

☐ Ponding ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

☐ Seeps ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

☐ Soft Subgrade ☐ Location Shown on Site Map Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

I. Slope Instability ☐ Location Shown on Site Map ☐ Slope Instability Not Evident

☐ Slides Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

2. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

A. Flows Bypass Bench ☐ Location Shown on Site Map ☒ N/A or Okay

Remarks: Click or tap here to enter text.

B. Bench Breached ☐ Location Shown on Site Map ☒ N/A or Okay

Remarks: Click or tap here to enter text.

C. Bench Overtopped ☐ Location Shown on Site Map ☐ N/A or Okay

Remarks: Click or tap here to enter text.

3. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

A. Settlement ☐ Location Shown on Site Map ☒ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Material Degradation ☐ Location Shown on Site Map ☒ Degradation Not Evident

Material Type: Click or tap here to enter text. Areal Extent: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Some erosion is evident

D. Undercutting ☐ Location Shown on Site Map ☒ Undercutting Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

E. Obstructions ☐ Location Shown on Site Map ☐ Undercutting Not Evident

Type: Click or tap here to enter text.

Areal Extent: Click or tap here to enter text. Size: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

F. Excessive Vegetative Growth ☐ Location Shown on Site Map ☐ Excessive Growth Not Evident

Areal Extent: Click or tap here to enter text. ☐ Vegetation in channels does not obstruct flow

Remarks: Click or tap here to enter text.

4. Cover Penetrations ☐ Applicable ☒ N/A

A. Gas Vents ☐ Active ☐ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

B. Gas Monitoring Probes

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

C. Monitoring Wells

☒ Properly secured/locked ☐ Functioning ☒ Routinely sampled

☒ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☐ N/A

Remarks: Click or tap here to enter text.

D. Leachate Extraction Wells

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled

☐ Good condition ☐ Evidence of leakage at penetration

☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

E. Settlement Monuments ☐ Located ☐ Routinely Surveyed ☒ N/A

Remarks: Click or tap here to enter text.

5. Gas Collection and Treatment ☐ Applicable ☒ N/A

A. Gas Treatment Facilities

☐ Flaring ☐ Thermal Destruction ☐ Collection for Reuse

☐ Good condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Gas Collection Wells, Manifolds, and Piping

☐ Good condition ☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

C. Gas Monitoring Facilities (e.g. gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs Maintenance ☒ N/A

Remarks: Click or tap here to enter text.

6. Cover Drainage Layer ☐ Applicable ☒ N/A

A. Outlet Pipes Inspected ☐ Functioning ☒ N/A

Remarks: Click or tap here to enter text.

B. Outlet Rock Inspected ☐ Functioning ☒ N/A

Remarks: Click or tap here to enter text.

7. Detention/Sediment Ponds ☐ Applicable ☒ N/A

A. Siltation ☐ Siltation Not Evident ☒ N/A

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Erosion ☒ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Outlet Works ☐ Functioning ☒ N/A

Remarks: Click or tap here to enter text.

D. Dam ☐ Functioning ☒ N/A

Remarks: Click or tap here to enter text.

8. Retaining Walls ☐ Applicable ☒ N/A

A. Deformations ☐ Location Shown on Site Map ☒ Deformation Not Evident

Horizontal Displacement: Click or tap here to enter text.

Vertical Displacement: Click or tap here to enter text.

Rotational Displacement: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Degradation ☐ Location Shown on Site Map ☐ Deformation Not Evident

Remarks: Click or tap here to enter text.

9. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

A. Siltation ☐ Location Shown on Site Map ☐ Siltation Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

B. Vegetative Growth ☐ Location Shown on Site Map ☐ N/A

☐ Vegetation Does Not Impede Flow

Areal Extent: Click or tap here to enter text. Type: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

C. Erosion ☐ Location Shown on Site Map ☐ Erosion Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

D. Discharge Structure ☐ Functioning ☐ N/A

Remarks: Click or tap here to enter text.

VIII. VERTICAL BARRIER WALLS

☐ Applicable ☒ N/A

1. Settlement ☐ Location Shown on Site Map ☐ Settlement Not Evident

Areal Extent: Click or tap here to enter text. Depth: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

2. Performance Monitoring Type of Monitoring: Click or tap here to enter text.

☐ Performance Not Monitored ☐ Evidence of Breaching

Frequency: Click or tap here to enter text. Head Differential: Click or tap here to enter text.

Remarks: Click or tap here to enter text.

IX. GROUNDWATER/SURFACE WATER REMEDIES

☒ Applicable ☐ N/A

1. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

A. Pumps, Wellhead Plumbing, and Electrical ☒ N/A

☒ Good Condition ☐ All Required Wells Properly Operating ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Spare Parts and Equipment ☐ Needs to be Provided

☒ Readily Available ☐ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

2. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

A. Collection Structures, Pumps, and Electrical

☒ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

B. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances

☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Spare Parts and Equipment ☐ Needs to be Provided

☐ Readily Available ☐ Good Condition ☐ Requires Upgrade

Remarks: Click or tap here to enter text.

3. Treatment System ☐ Applicable ☒ N/A

A. Treatment Train (Check components that apply)

☒ Metals removal ☐ Oil/Water Separation ☐ Bioremediation

☒ Air Stripping ☐ Carbon Absorbers

☒ Filters Click or tap here to enter text.

☒ Additive (e.g. chelation agent, flocculent) Click or tap here to enter text.

☐ Others Click or tap here to enter text.

☒ Good Condition ☐ Needs Maintenance

☒ Sampling ports properly marked and functional

☒ Sampling/maintenance log displayed and up to date

☒ Equipment properly identified

☒ Quantity of groundwater treated annually See Table 3.2 Attached

☐ Quantity of surface water treated annually Click or tap here to enter text.

Remarks: Municipal/ City Water Treatment Plant

B. Electrical Enclosures and Panels (properly rated and functional)

☒ N/A ☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

C. Tanks, Vaults, Storage Vessels ☒ N/A

☐ Proper Secondary Containment ☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

D. Discharge Structure and Appurtenances

☐ N/A ☐ Good Condition ☐ Needs Maintenance

Remarks: Click or tap here to enter text.

E. Treatment Building(s)

☐ N/A ☒ Good condition (esp. roof and doorways)

☐ Needs repair ☒ Chemicals and equipment properly stored

Remarks Click or tap here to enter text.

F. Monitoring Wells (Pump and Treatment Remedy) ☐ N/A

☒ Properly secured/locked ☒ Functioning

☒ Routinely sampled ☒ All required wells located

☒ Good condition ☐ Needs Maintenance

Remarks Click or tap here to enter text.

4. Monitoring Data

A. Monitoring Data:

☒ Is Routinely Submitted on Time ☒ Is of Acceptable Quality

B. Monitoring Data Suggests:

☐ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

5. Monitored Natural Attenuation

A. Monitoring Wells (natural attenuation remedy) ☐ N/A

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled

☐ All required wells located ☐ Needs Maintenance ☒ Good condition

Remarks: wells are located during the monitoring events and documented

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

1. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Issues noted with the landfill cover. Although it is maintained, it does not prevent infiltration.

2. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M is properly performed except the issue noted above with the landfill cover.

3. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

Click or tap here to enter text.

4. Early Indicators of Potential Remedy Problems

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Click or tap here to enter text.

Wausau Superfund Site
Five-Year Review Inspection
10-29-19

Sheri Bianchin,	RPM USEPA	SEMD	bianchin.sheri@epa.gov
Matt Thompson	WDNR		Matthew.Thompson@wisc.gov
Charles Ahrens	GHD		charles.ahrens@ghd.com
Scott Boers	Wausau Water		Scott.boers@ci.wausau.wi.us
Allen Williams	Donohue		awilliams@donohue-associates.com
Steve Opatik	Becher Hoppe		sopatik@becherhoppe.com
JOE GEHLEN	UTILITY COMMISSION		JGEHLEN@".com
Kevin Fabel	Env. Eng. - City Wausau		Kfabel@ci.wausau.wi.us

Appendix E

Copy of Newspaper Notice Publication Announcing Five-Year Review Start

Michigan AG sues to shut down Great Lakes pipeline

ASSOCIATED PRESS

Michigan's attorney general sued Thursday to shut down dual oil pipelines in the Great Lakes, saying they pose an "unacceptable risk."

Democrat Dana Nessel's move came the same day she also sought to dismiss pipeline operator Enbridge's request for a ruling on the legality of a deal it struck last year with former Republican Gov. Rick Snyder to put replacement pipes in a tunnel beneath the Straits of Mackinac.

"I have consistently stated that Enbridge's pipelines in the Straits need to be shut down as soon as possible because they present an unacceptable risk to the Great Lakes," she said in a written statement.

Nessel said she acted after it became clear talks between Enbridge and Democratic Gov. Gretchen Whitmer stalled.

The pipelines are part of Enbridge's Line 5, which carries 23 million gallons of crude oil and natural gas liquids daily between Superior, Wisconsin, and Sarnia, Ontario.

Whitmer ordered her administration not to implement the tunnel plan after Nessel said authorizing legislation enacted in December violated the state constitution.

Enbridge insists the twin pipes, which have been in place since 1953, are in sound condition and could operate indefinitely. But the company, based in Calgary, Alberta, said it is willing to install a tunnel in bedrock 100 feet beneath the lakebed and foot the estimated $500 million bill to eliminate virtually any possibility of a leak.

Opponents contend Enbridge's refusal to shut down the pipeline until the tunnel is completed means the straits area would be endangered for at least another five years. They point to a vessel anchor strike in April 2018 that dented both pipes while damaging three nearby electric cables, which leaked 800 gallons of insulating mineral oil.

In 2017 and 2018, the Journal Sentinel reported extensively on pressure building to pump more oil through aging Great Lakes pipelines as companies struggled to gain approval for new pipelines in the Great Plains states.

Wisconsin case

The Michigan action came the same day the Wisconsin Supreme Court backed Enbridge in a separate matter.

The Wisconsin Supreme Court has ruled for Enbridge Energy in a case over whether the company could be required to get additional insurance for a pipeline project in Dane County.

Enbridge filed in 2014 to expand a pumping station so it could expand capacity of a pipeline running from northern Wisconsin to Illinois. But the county sought to require Enbridge to get extra insurance in case of spills.

The Legislature then blocked counties from requiring additional insurance on pipelines when the operator already carries comprehensive insurance. After Dane County required the extra insurance anyway, Enbridge won at the circuit court level, only to have an appeals court decide that Enbridge hadn't proven it carried enough insurance.

The high court reversed that Thursday, writing that Enbridge already had sufficient insurance.

Pecha

Continued from Page 1A

community is in also mourning.

Shortly after his mother's death, Brodey Pecha launched a Facebook fundraiser aiming to raise $15,000 to help offset some of the costs incurred by the family while Heidi was in the hospital. Well wishes, sympathies and donations poured in from colleagues, students, parents and others.

"Heidi was a very special person and an important one to me. She was always there for me when I was going through a hard time. She made everyone feel important and special," wrote one donor on the page.

"Heidi was one of the most caring and enthusiastic people ever to work with teenagers," wrote another.

In a matter of days, the effort raised $17,525 from about 400 people, and Brodey ended the fundraiser.

In the 25 years they were together, Todd and Heidi built a quiet, unassuming life together, valuing time with family, outdoors and animals and pets. They raised goats and pigs at their rural home southeast of Mosinee. Heidi had a soft spot for animals, all kinds of animals, and took care of them all.

She and Todd also spent much of their summers in Kewaunee, sleeping, through the years, in a pop-up camper, a mobile home and, finally, a boat. Heidi and Todd reveled in fishing, lounging at the beach and simply relaxing around Lake Michigan.

"If you ever experienced Lake Michigan sunrises and sunsets, you know how beautiful they are," said Todd, who works as the wood yard manager at the paper mill in Mosinee. "It isn't a social media world. ... Some of our better times, most memorable times, were when it was just the two of us."

Todd and Heidi simply gelled together. "It got to the point in our relationship where we were truly on the same page with each other," Todd said.

He doesn't know exactly whose idea it was to make Thursday evenings "arts and crafts" night where they would work on little projects, cook up special recipes together. But it became a kind of date night, experimenting by making flat bread pizzas or fruit- and herb-infused vodka in cool bottles. "We never even drank them, we just used them for decoration," Todd said.

Cancer took Heidi when she was too young, Todd said.

"But I got to spend 25 years with an amazing lady," he said. "I had 25 years in a great relationship. And a lot of people don't get that."

A celebration of Heidi's life will be held Sunday at the Stoney Creek Hotel and Conference Center, 1100 Imperial Ave., Rothschild. Social time will be held from 10 a.m. to 1 p.m.; remembrance speeches given from 1 p.m. to 2 p.m.; and a meal served at 2 p.m.

Contact Keith Uhlig at 715-845-0651 or kuhlig@gannett.com. Follow him at @UhligK on Twitter and Instagram or on Facebook.

EPA

EPA Begins Review of
Wausau Groundwater Contamination
Superfund Site
Wausau, Wisconsin

U.S. Environmental Protection Agency (EPA) is conducting a five-year review of the Wausau Groundwater Contamination Superfund site in Wausau, Wisconsin. The Superfund law requires regular checkups of sites that have been cleaned up – with waste managed on-site – to make sure the cleanup continues to protect people and the environment. This is the sixth review of the site.

EPA's cleanup of volatile organic compounds consisted of several extraction wells and treatment systems, two soil vapor extraction systems, a landfill cover over the waste area, land and groundwater-use restrictions, and groundwater monitoring. Also, several homes are being sampled to determine if vapor intrusion is present.

More information is available for review at the Marathon County Public Library, 300 N. First St., Wausau, and at www.epa.gov/superfund/wausau-groundwater. The review should be completed by April 2020.

The five-year review is an opportunity for you to tell EPA about site conditions and any concerns you have. Contact:

Susan Pastor
Community Involvement Coordinator
312-353-1325
pastor.susan@epa.gov

Sheri Bianchin
Remedial Project Manager
312-886-4745
bianchin.sheri@epa.gov

You may call EPA toll-free at 800-621-8431, 8:30 a.m. to 4:30 p.m., weekdays.

Appendix F

Deed Restrictions Implemented on Wausau Chemical Property

STATE OF WISCONSIN - MARATHON COUNTY
RECORDED
04/26/2007 2:24:45 PM
MICHAEL J. SYDOW, REGISTER OF DEEDS

DOC# 1475599

Document Number | DEED RESTRICTION

Michael J. Sydow

Declaration of Restriction

In Re:
James E. Cherwinka Trust

Parcel 1:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, County of Marathon, State of Wisconsin, described as follows:

Beginning at a point on the South line of Wausau Avenue 227.75 feet West of the West line of Second Street; thence South perpendicular to the South line of Wausau Avenue, 70 feet; thence West, parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track; thence Southwesterly on a curve parallel to and 15 feet distant Northwesterly from the center line of said railroad siding track, to a point 458 feet West of the West line of Second Street; thence North to the South line of Wausau Avenue at a point which is 458 feet West of the West line of Second Street; thence East along the South line of Wausau Avenue 230.25 feet, more or less, to the point of beginning.

Recording Area

Name and Return Address Add'l 25-one

James E. Cherwinka Trust
c/o Attorney James E. Wiederhoeft
Fowler and Wiederhoeft LLP
702 North Blackhawk Avenue
Madison, Wisconsin 53705-5326
and
Wausau Chemical Corp.
2001 North River Drive
Wausau, Wisconsin 54401

291-2907-252-0990 NW NW
291-2907-252-0997 NW NW
Parcel Identification Numbers (PIN)

COPY

Parcel 2:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet NW'ly of railroad siding track, thence SW'ly on a curve parallel to and 15 feet NW'ly from the center line of said railroad siding track

to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence SW'ly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence SW'ly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence NE'ly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence SW'ly, along the East boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

1309166

The above Parcels 1 and 2 are part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44, a copy of which is attached hereto as Exhibit A. The above Parcels 1 and 2 are also identified as PIN 291-2907-252-0990.

And

Wausau Chemical Corporation

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, designated as the excepted parcel, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet NW'ly of railroad siding track, thence SW'ly on a curve parallel to and 15 feet NW'ly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence SW'ly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle

19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence SW'ly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence NE'ly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence SW'ly, along the East Boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above description is a part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44. See Exhibit A. This parcel is also identified as PIN 291-2907-252-0997.

STATE OF WISCONSIN)
)ss
COUNTY OF MARATHON)

WHEREAS, the James E. Cherwinka Trust and Wausau Chemical Corporation are the owners of the above-described property.

WHEREAS, James E. Cherwinka died on October 18, 2005. The James E. Cherwinka Trust is the successor in interest to James E. Cherwinka in connection with said above-described property.

WHEREAS, one or more historical tetrachloroethylene discharges have occurred on this property, and as of November 7, 2001, soil samples collected on this property contained tetrachloroethylene at concentrations of 1.0 mg/kg at grid point 19-4 at a depth of eight feet and 0.67 mg/kg at grid point 35-7 at a depth of four feet, trichloroethylene at a concentration of 0.43 mg/kg at grid point 35-7 at a depth of four feet and cis-1,2-dichloroethylene at a concentration of 0.13 mg/kg at grid point 35-7 at a depth of four feet, all as shown on Figure 1.

WHEREAS, the existing building and pavement on the property provide a partial barrier, minimizing infiltration, and the depth of the remaining contaminants prevents direct contact with the residual soil contamination.

WHEREAS, sampling data on and about the property has demonstrated soil cleanup adequately protective of groundwater quality; however, residual soil contamination remains on the property.

WHEREAS, it is the desire and intention of the property owners to impose on the property restrictions that will make it unnecessary to conduct further soil remediation activities on the property at the present time.

NOW THEREFORE, the owners hereby declare that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

1. Construction or installation of any water supply well on the property is prohibited pursuant to this deed restriction.

2. Plowing or cultivation of agricultural crops on the property is prohibited pursuant to this deed restriction.

3. The existing Wausau Chemical Corporation building shown on Exhibit B makes complete remediation of soils beneath the building impractical. If the existing building is removed or modified, the property owner shall conduct an investigation to determine the degree and extent of soil contamination beneath the building. To the extent that soil contamination is found at that time, the Wisconsin Department of Natural Resources shall be immediately notified and the soil contamination shall be managed in accordance with applicable statutes and rules. If currently inaccessible soil contamination near or beneath the building is excavated in the future, the soil must be sampled and analyzed, may be considered solid or hazardous waste if residual contamination remains and must be stored, treated and disposed in compliance with applicable statues and rules.

4. The existing pavement forms a barrier that will be maintained in accordance with the maintenance plan entitled "Pavement Cover and Building Barrier Maintenance Plan, Wausau Chemical Corporation", dated October 17, 2006. The existing pavement will minimize the infiltration of water which prevents additional groundwater contamination. The existing pavement shall be maintained on the property in the locations shown on Exhibit B. Such existing pavement shall not be removed without the approval of the Wisconsin Department of Natural Resources.

5. If construction or installation of buildings, structures or other improvements occur on grid points 19-4 or 35-7 shown on Exhibit B, then the affected soils at grid points 19-4 or 35-7 shall be sampled and managed in accordance with applicable statutes and rules.

6. The property shall be used only for industrial purposes.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase, or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons

DOC # 1475599

who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded by the property owner or other interested party to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Rhona Vogel asserts that he or she is duly authorized to sign this document as a Trustee of the James E. Cherwinka Trust.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 13 day of April, 2007.

Signature: Rhona Vogel
Printed Name: Rhona Vogel
Trustee, James E. Cherwinka Trust

Subscribed and sworn to before me
this 13 day of April, 2007

Lynn Heyck
Notary Public, State of Wisconsin
My commission expires 7/22/07

By signing this document, Jeff Cherwinka asserts that he or she is duly authorized to sign this document as an officer of Wausau Chemical Corporation.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 19 day of April, 2007.

Signature: Jeff Cherwinka
Printed Name: Jeff Cherwinka
Officer of Wausau Chemical Corporation

DOC# 1475590

Subscribed and sworn to before me
this 12th day of April, 2007

Notary Public, State of Wisconsin
My commission 08-05-07

This document was drafted by Michael Best & Friedrich LLP and Conestoga-Rovers and Associates, Inc.

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12726

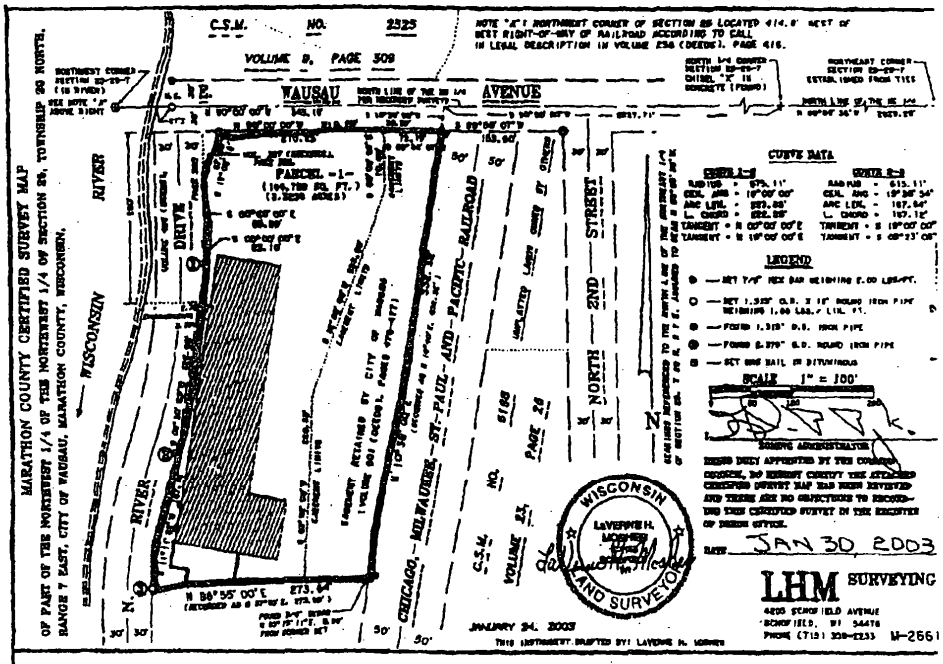

EXHIBIT A

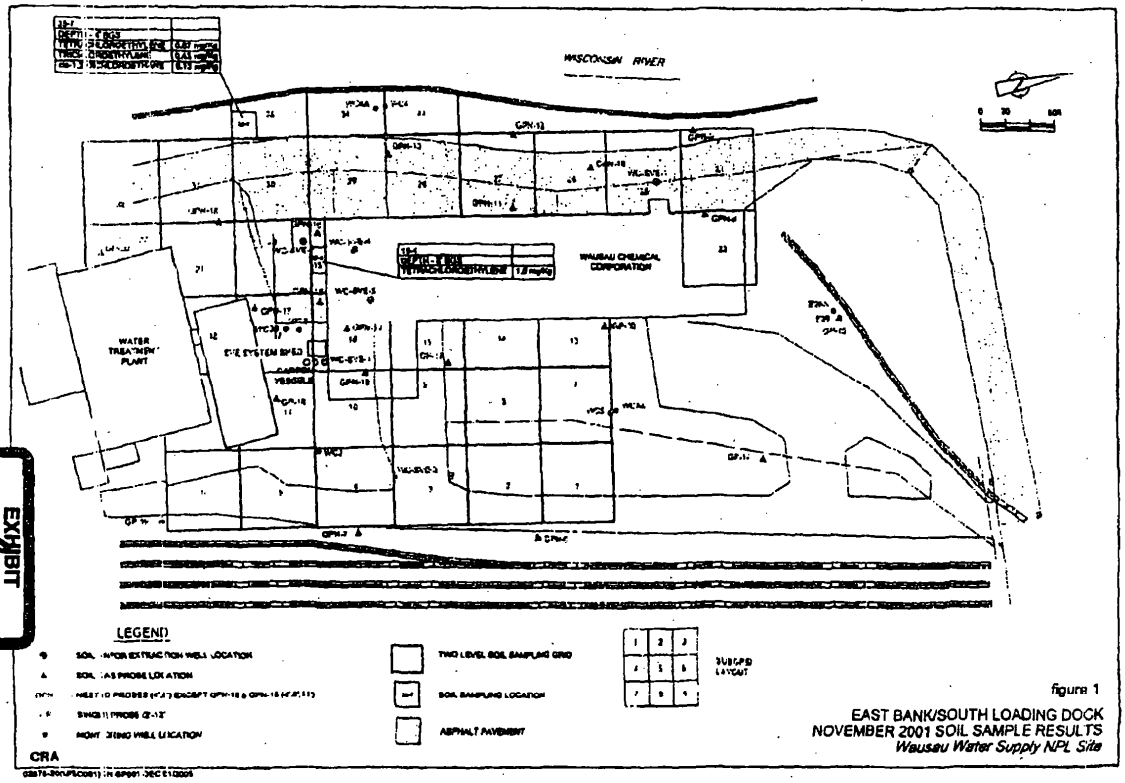

figure 1
EAST BANK/SOUTH LOADING DOCK
NOVEMBER 2001 SOIL SAMPLE RESULTS
Wausau Water Supply NPL Site

CRA

EXHIBIT B

STATE OF WISCONSIN - MARATHON COUNTY
RECORDED
04/24/2008 8:22:57 AM
MICHAEL J. SYDOW, REGISTER OF DEEDS

DOC# 1507947

Document Number | DEED RESTRICTION

Declaration of Restriction

In Re:
James E. Cherwinka Trust

Michael J. Sydow

Recording Area

Name and Return Address

James E. Cherwinka Trust
c/o Thomas A. Strandberg, Esq.
McNally, Maloney & Peterson, S.C.
2600 N. Mayfair Road, Suite 1080
Milwaukee, WI 53226
and
Wausau Chemical Corp.
2001 North River Drive
Wausau, Wisconsin 54401

Chg Ratio 2.5%

291-2907-252-0990 NWNW
291-2907-252-0997 NWNW

Parcel Identification Numbers (PIN)

Parcel 1:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, County of Marathon, State of Wisconsin, described as follows:

Beginning at a point on the South line of Wausau Avenue 227.75 feet West of the West line of Second Street; thence South perpendicular to the South line of Wausau Avenue, 70 feet; thence West, parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track; thence Southwesterly on a curve parallel to and 15 feet distant Northwesterly from the center line of said railroad siding track, to a point 458 feet West of the West line of Second Street; thence North to the South line of Wausau Avenue at a point which is 458 feet West of the West line of Second Street; thence East along the South line of Wausau Avenue 230.25 feet, more or less, to the point of beginning; EXCEPTING that part thereof described in Deed recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 257 of Micro-Records on page 356.

Parcel 2:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track, thence Southwesterly

on a curve parallel to and 15 feet Northwesterly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence Southwesterly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence Southwesterly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; EXCEPTING therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence North 83° 46' 30" East, 99.6 feet; thence Northeasterly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence Southwesterly, along the East boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above Parcels 1 and 2 are part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44, a copy of which is attached hereto as Exhibit A. The above Parcels 1 and 2 are also identified as PIN 291-2907-252-0990.

And

Wausau Chemical Corporation

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, designated as the excepted parcel, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track, thence Southwesterly on a curve parallel to and 15 feet Northwesterly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point,

said point being the P.C. of a reverse curve to the right; thence Southwesterly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point, said point being the point of reverse curvature; thence Southwesterly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence Northeasterly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence Southwesterly, along the East Boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above description is a part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44. See Exhibit A. This parcel is also identified as PIN 291-2907-252-0997.

STATE OF WISCONSIN)
)ss
COUNTY OF MARATHON)

WHEREAS, the James E. Cherwinka Trust and Wausau Chemical Corporation are the owners of the above-described property.

WHEREAS, James E. Cherwinka died on October 18, 2005. The James E. Cherwinka Trust is the successor in interest to James E. Cherwinka in connection with said above-described property.

WHEREAS, one or more historical tetrachloroethylene discharges have occurred on this property, and as of November 7, 2001, soil samples collected on this property contained tetrachloroethylene at concentrations of 1.0 mg/kg at grid point 19-4 at a depth of eight feet and 0.67 mg/kg at grid point 35-7 at a depth of four feet, trichloroethylene at a concentration of 0.43 mg/kg at grid point 35-7 at a depth of four feet and cis-1,2-dichloroethylene at a concentration of 0.13 mg/kg at grid point 35-7 at a depth of four feet, all as shown on Figure 1.

WHEREAS, the existing building and pavement on the property provide a partial barrier, minimizing infiltration, and the depth of the remaining contaminants prevents direct contact with the residual soil contamination.

WHEREAS, sampling data on and about the property has demonstrated soil cleanup adequately protective of groundwater quality; however, residual soil contamination remains on the property.

WHEREAS, it is the desire and intention of the property owners to impose on the property restrictions that will make it unnecessary to conduct further soil remediation activities on the property at the present time.

NOW THEREFORE, the owners hereby declare that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

1. Construction or installation of any water supply well on the property is prohibited pursuant to this deed restriction.

2. Plowing or cultivation of agricultural crops on the property is prohibited pursuant to this deed restriction.

3. The existing Wausau Chemical Corporation building shown on Exhibit B makes complete remediation of soils beneath the building impractical. If the existing building is removed or modified, the property owner shall conduct an investigation to determine the degree and extent of soil contamination beneath the building. To the extent that soil contamination is found at that time, the Wisconsin Department of Natural Resources shall be immediately notified and the soil contamination shall be managed in accordance with applicable statutes and rules. If currently inaccessible soil contamination near or beneath the building is excavated in the future, the soil must be sampled and analyzed, may be considered solid or hazardous waste if residual contamination remains and must be stored, treated and disposed in compliance with applicable statues and rules.

4. The existing pavement forms a barrier that will be maintained in accordance with the maintenance plan entitled "Pavement Cover and Building Barrier Maintenance Plan, Wausau Chemical Corporation", dated October 17, 2006. The existing pavement will minimize the infiltration of water which prevents additional groundwater contamination. The existing pavement shall be maintained on the property in the locations shown on Exhibit B. Such existing pavement shall not be removed without the approval of the Wisconsin Department of Natural Resources.

5. If construction or installation of buildings, structures or other improvements occur on grid points 19-4 or 35-7 shown on Exhibit B, then the affected soils at grid points 19-4 or 35-7 shall be sampled and managed in accordance with applicable statutes and rules.

6. The property shall be used only for industrial purposes.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise,

purchase, or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded by the property owner or other interested party to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Rhona E. Vogel asserts that he or she is duly authorized to sign this document as a Trustee of the James E. Cherwinka Trust.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 8th day of Jan, 2008.

Signature: Rhona E Vogel
Printed Name: Rhona E. Vogel
Trustee, James E. Cherwinka Trust

Subscribed and sworn to before me
this 8 day of JANUARY, 2008

NOTARY PUBLIC THOMAS A. STRANDBERG STATE OF WISCONSIN

Notary Public, State of WISCONSIN
My commission PERMANENT

By signing this document, John Bocka asserts that he or she is duly authorized to sign this document as an officer of Wausau Chemical Corporation.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 18 day of April, 2008

Signature: John Bocka
Printed Name: John Bocka
Officer of Wausau Chemical Corporation

Subscribed and sworn to before me
this 15th day of April, 2005.

Notary Public, State of Wisconsin
My commission is Permanent

This document was drafted by Michael Best & Friedrich LLP; Conestoga-Rovers and Associates, Inc.; and McNally, Maloney & Peterson, S.C.

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Doc# 1507947

12726

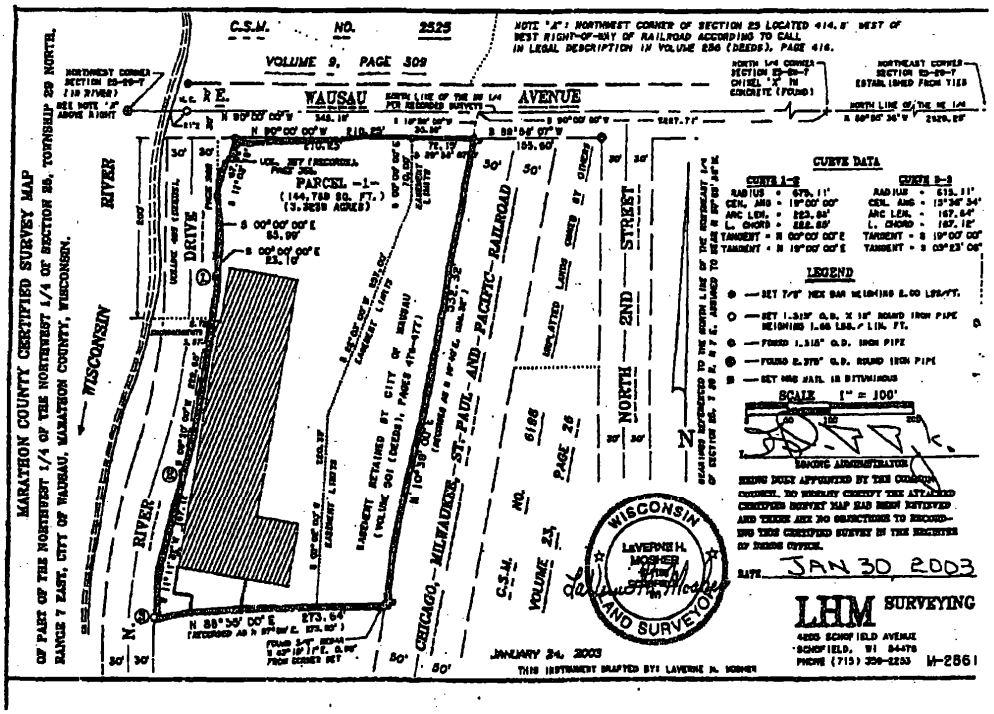

EXHIBIT A

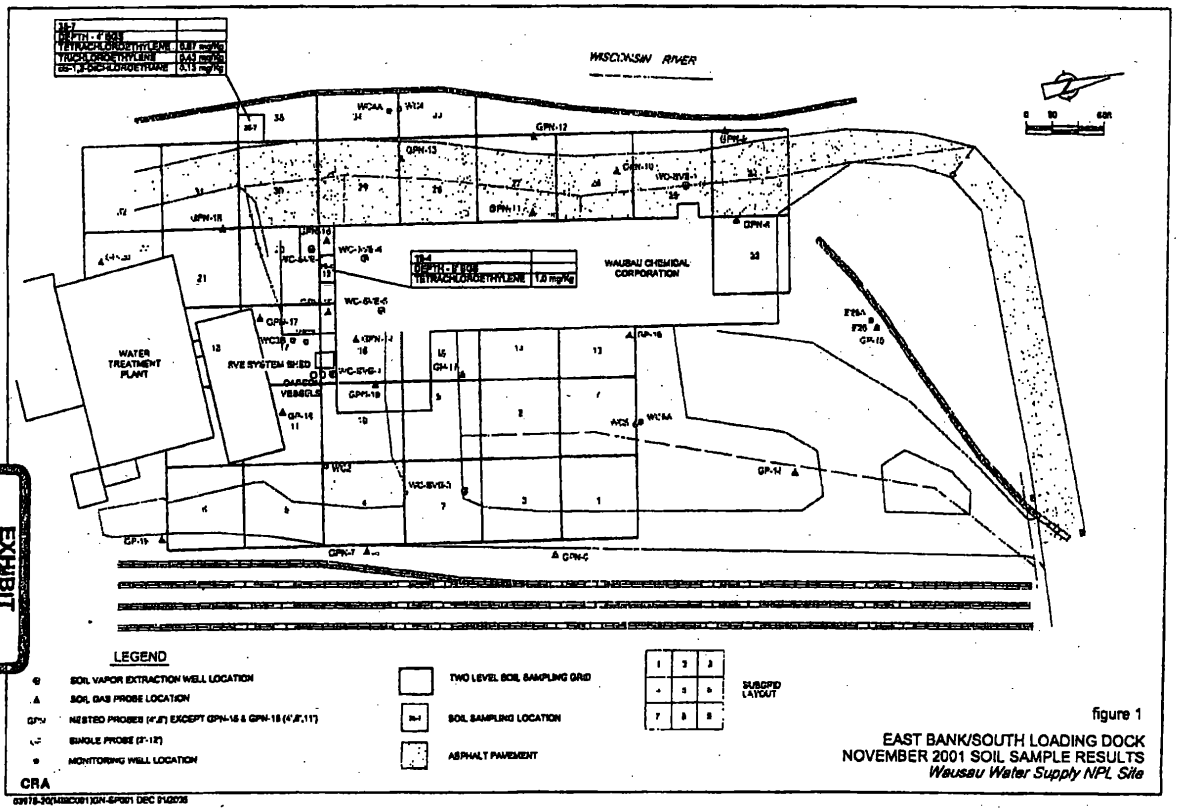

figure 1
EAST BANK/SOUTH LOADING DOCK
NOVEMBER 2001 SOIL SAMPLE RESULTS
Wausau Water Supply NPL Site

EXHIBIT B

Appendix G

Excerpt From the Wausau Municipal Code – Title 19; Chapter 19.30

and

WDNR BRRTS/GIS Registry Notice and Coversheet

~~ATTACHMENT 5~~

Title 19

PLUMBING

Chapters:

19.04 State Code—State License
19.08 Plumbing Inspector
19.12 Permits
19.16 Inspections
19.20 Sewers
19.24 Connection to Water Main
19.30 Private Water Wells
19.32 Swimming Pools
19.36 Individual Sewage Disposal Systems
19.40 Cross-connection to Water Service
19.44 Special Provisions
19.48 Insurance
19.52 Penalties

Chapter 19.04

STATE CODE—STATE LICENSE

Sections:

19.04.010 State plumbing code adopted.
19.04.020 State license required.
19.04.030 Conflict of provisions.

19.04.010 State plumbing code adopted. Chapter 145 of the Wisconsin Statutes and all future amendments thereto and Comm 25 and Comm 81–87 of the Wisconsin Administrative Code (WAC), and all future amendments and official bulletins thereto are adopted and, by reference, made a part of this title with the same force and effect as though set out in full in this title. Failure to comply with any of the provisions of the statutes or administrative rules, regulations and bulletins constitutes a violation of this title, subject to the forfeitures provided herein. Copies of the statutes and administrative rules, regulations and bulletins adopted in this title shall be kept on file in the office of the plumbing inspector in the city hall. (Ord 61.5113 §1, 2001, File No. 01-0518; Ord. 61-4380 §1(part), 1978.)

19.04.020 State license required. No person shall engage in or work at plumbing as defined in Chapter 145 of the Wisconsin Statutes without complying with that chapter. (Ord. 61-4380 §1(part), 1978.)

19.04.030 Conflict of provisions. Where a conflict exists between this title and the WAC, Revisions or Official Bulletins, the provisions of WAC, its Revisions or Official Bulletins shall prevail, except where an ordinance has been adopted after the effective date of the conflicting WAC provision. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.08

PLUMBING INSPECTOR

Sections:

19.08.010 Inspector.
19.08.020 Permits.
19.08.030 Registration of plumbers.
19.08.040 Manufactured products.
19.08.050 Records.

19.08.010 Inspector. There shall be one or more plumbing inspectors. (Ord. 61-4380 §1(part), 1978.)

19.08.020 Permits. The inspector or authorized agent shall take applications and issue permits to qualified applicants. (Ord. 61-4380 §1(part), 1978.)

19.08.030 Registration of plumbers. (a) The plumbing inspector shall keep on file a registration of all master, journeyman and apprentice plumbers engaged in the plumbing trade in the city.

(b) The registration shall include the name, address, license number, and current receipt number. In addition, apprentices shall state year of apprenticeship and the shop to which indentured. Master and journeyman registration shall state "contracting plumber or maintenance plumber" and place of employment. (Ord. 61-4380 §1(part), 1978.)

19.08.040 Manufactured products. When requested by the manufacturer or another municipality, the inspector is authorized to make inspections of plumbing installations manufactured for shipment out of the city. (Ord. 61-4380 §1(part), 1978.)

19.08.050 Records. The inspector shall prepare suitable applications, keep a daily log of all office transactions, and file with the common council a monthly report of such transactions. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.12

PERMITS

Sections:

19.12.010 Installation permit.
19.12.020 When required.
19.12.030 Fees.
19.12.040 Application.
19.12.050 Restrictions on issuance.
19.12.060 Expiration.

19.12.010 Installation permit. No person shall install or cause to be installed any plumbing or drainage unless a permit therefor has been issued by the plumbing inspector, and no plumbing shall be used until it has been inspected and approved by the inspector. No permit fee shall be refunded and no permit shall be transferable. (Ord. 61-4380 §1(part), 1978.)

19.12.020 When required. A permit shall be obtained:

(a) To perform any clearwater drainage or plumbing work as defined in Chapter 145 of the Wisconsin Statutes, the Wisconsin Administrative Code (WAC), or this title;

(b) To abandon a water or sewer system before a wrecking or moving permit shall be issued by the city;

(c) For the installation, replacement, or relocation of any water conditioning unit. Only the original installation of exchange regeneration service type units require a permit;

(d) For the installation, replacement, or relocation of any domestic water heating unit;

(e) For construction of any water distribution system from a source other than city water mains;

(f) For the connection of any dispensing unit to water and/or waste pipes;

(g) For the connection of any injection equipment intended to inject or otherwise insert any chemical, soap, or other material of any kind whatsoever into any water distribution pipe;

(h) For the water and/or waste connection for each water-cooled air conditioner or water-cooled motor of humidifier;

(i) For the installation of all inside roof leaders or downspouts;

(j) For new or reconstructed sanitary sewer lateral or storm drains;

(k) For new or reconstructed water service extension from water main to curb stop or to building;

(l) For the installation of any sump pump or ejector;

(m) For the discharge point of any subsoil or footing drain. The storm sewer or catch basin or sump will not require an additional permit at the discharge point;

(n) When inspection is requested, except for inspection of plumbing work to be shipped out of the city;

(o) A permit will be required for the replacement of all plumbing fixtures;

(p) The requirements of section 19.48.010 of this title shall not apply to licensed and registered maintenance plumbers obtaining permits for plumbing work within the complex of their employer's business enterprises. Section 19.48.010 shall apply to any work performed in a public right-of-way;

(q) Permits may be applied for by licensed master plumbers and qualified home owners pursuant to Chapter 145 of the Wisconsin Statutes, either or both of whom may be prosecuted for the failure to obtain the permit prior to the commencement of the job. (Ord. 61-4654 §(part), 1988; Ord. 61-4380 §1(part), 1978.)

19.12.030 Fees. (a) The following permit and inspection fees shall be paid at the time a permit is issued:

New or reconstructed water service extension from curb stop two inches or less, each one hundred feet or fraction thereof	$11.00
For each additional inch in diameter	$7.25
New or reconstructed sanitary building sewer extension from main, curb or lot line, any size, each one hundred feet or fraction thereof	$11.00
New or reconstructed building or area storm sewer extension from main, curb or lot line, any size, each one hundred feet or fraction thereof	$11.00
New or reconstructed sanitary or storm building drains, any size, each one hundred feet or fraction thereof	$11.00
For each fixture or fixture connection	$7.25
Private sewer and water mains, any size, each one hundred feet or fraction thereof	$11.00
Water conditioners, replacement or relocation	$10.50
Water heaters, replacement or relocation	$10.50

Dispensing equipment connection, replacement or relocation	$10.50
Water distribution system from source other than city water mains	$10.50
Fire protection sprinkler system	$10.50
Below surface lawn sprinkler system	$10.50
Sumps or catch basins (sanitary and clearwater)	$7.25
Sump pump or ejectors (sanitary and clearwater)	$7.25
Inside roof leaders or downspouts (each roof terminal)	$7.25
Subsoil drain discharge point	$7.25
Private water well (five-year permit—issued by Wausau Water Works	$60.00
Private sewage disposal system	$37.00
Swimming pool	$37.00
Reconstruction of any part of the building drain, soil waste and vent pipe, downspouts, or water distribution piping. No permit will be required where permit is issued for additional fixtures, connected appliances and appurtenances or the relocation or replacement of existing units	$10.50
Water distribution and drain piping for manufacturing processes, each one hundred fee or fraction thereof	$11.00
To abandon water or sewer system when wrecking or moving a building	$37.00
To abandon a private well and/or septic system	$37.00
Inspect and attest to plumbing installed for shipment out of the city	$37.00
Minimum fee charged for all permits	$37.00
Reinspection fee	$55.00
Failure to obtain permit prior to commencement of work	double fees

(b) Fixtures, appliances and appurtenances shall include but not be limited to: water closets, wash basins, bathtubs, shower stalls, urinals, service sinks, sinks, dishwashers, garbage grinders, disposals, laundry tubs, floor drains, site drains, drinking fountains, bar connections, soda fountains, water-cooled refrigerators, ice cube machines, dental cuspidors, all type water heaters, water-cooled motor connections, all water conditioning units, sumps, drain tile receivers, footing or subsoil drain discharge point, inside roof drains, catch basins, yard drains, grease and oil separators, pumps and ejectors, water or waste connection to machines, water or waste connection

to any appliance, buried lawn sprinklers, drink dispensers, swimming pools, water-cooled air conditioner and connections, mobile home connections, fire protection installation, private sewage disposal, water wells and injection equipment. (Ord. 61-5353 §4, 2007, File No. 00-1134; Ord. 61-5314 §4, 2006, File No. 00-1134; Ord. 61-5276 §4, 2005, File No. 00-1134; Ord. 61-5243 §1(part), 2004, File No. 00-1134; Ord. 61-5218 §1(part), 2003, File No. 00-1134; Ord. 61-5159 §1(part), 2002, File No. 02-0131; Ord. 61-5094 §1, 2000, File No.00-1134; Ord. 61-5066 §1, 2000; Ord. 61-5020 §1, 1999; Ord. 61-5018 §1(part), 1998; Ord. 61-4962 §1(part), 1996; Ord. 61-4875 §1(part), 1994; Ord. 61-4726 §2(part), 1990; Ord. 61-4654 §1(part), 1988; Ord. 61-4599 §1, 1986; Ord. 61-4380 §1(part), 1978.)

19.12.040 Application. (a) An application for a permit shall be made to the plumbing inspector or a designee before any work is started.

(b) The application shall state the property owner's name, address, and the land description where the work is to be done. It shall include the size and material of the water and sewer service pipes to the building and the kind and number of fixtures, appliances and appurtenances to be installed together with a statement that the owner and applicant will be bound by and subject to the rules and regulations of this chapter. Diagrams and notarized statements that may be considered necessary to ensure a complete and legal plumbing installation may be required as part of the application. (Ord. 61-4380 §1(part), 1978.)

19.12.050 Restrictions on issuance.* (a) No plumbing or sewer permit, with the exception of water and sewer laterals for street improvements, shall be granted until a building permit has been issued by the building inspector.

(b) No plumbing, clearwater drainage, or sewer permit will be issued to any person who is in noncompliance with an order of the electrical, building, or plumbing inspector.

(c) If any work is commenced without a permit first having been obtained therefor, the permit fee shall be twice the usual fee. Payment of any fee required by this chapter shall not relieve any person of the forfeitures that may be imposed for violation of this title. (Ord. 61-4380 §1(part), 1978.)

19.12.060 Expiration. Permits will automatically expire:

(a) When work ceases for a period of sixty days without good and reasonable cause;

(b) Upon cancellation or expiration of insurance required by section 19.48.010 of this title;

(c) Expire on completion of work for which it was issued. (Ord. 61-4380 §1(part), 1978.)

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* For other restrictions see also sections 19.28.030, 19.32.010, 19.32.020, 19.36.020(b) and 19.44.040(a) of this title.

Chapter 19.16

INSPECTIONS

Sections:

19.16.010 When required.
19.16.020 Notice for inspection.
19.16.030 Covering of work.
19.16.040 Report of existing unsanitary conditions.
19.16.050 Violation.
19.16.060 Certificate of occupancy.

19.16.010 When required. The plumbing inspector's jurisdiction includes but is not limited to:

(a) The entire building sanitary sewer and storm drainage, before backfilling, form the main sewer or other disposal terminal to the building; including connections at point of discharge; private sewage disposal systems; water wells and water service from curb box or approved well installation into the building;

(b) The building drain, and branches thereof under tests as prescribed. Such inspection shall be made before any part of the drain is covered;

(c) The soil waste vent pipes and the water distribution piping known as "roughing in" shall be inspected under test before it is enclosed or covered;

(d) All clearwater drains, interior downspouts, or roof leaders, subsoil or footing drain connection points, water-cooled air conditioners and connections, area and parking lot drainage;

(e) All devices of any kind connected to the water distribution pipe shall be inspected;

(f) Plumbing installations after fixtures, appliances and appurtenances have been tested and the installation is ready for use. The final inspection shall be made with the water supply serving the system turned on. (Ord. 61-4380 §1(part), 1978.)

19.16.020 Notice for inspection. (a) It shall be the responsibility of the person in whose name the permit is issued, to notify the inspector's office in person, by telephone or in writing when work is ready for test and inspection. If the inspection is not made the next full working day after the notice is given, the work may be covered and continued.

(b) Notice must be given before 2 p.m. to trigger the next full working day rule. (Ord. 61-4380 §1(part), 1978.)

19.16.030 Covering the work. (a) No part of any plumbing or clearwater drainage system shall be covered until it has been inspected and approved. If any part is covered before being inspected and approved, it shall be uncovered at the direction of the inspector.

(b) When the inspector approves of work, a tag shall be attached to either the building permit or to the work itself, and no plumbing or clearwater drainage work shall be covered until such tag is in place.

(c) Upon request, the owner or plumber shall be furnished with a certificate or letter indicating that an inspection has been made and showing whether the installation has been approved or disapproved. Violations or condemnation notice shall be issued by letter stating the reason. (Ord. 61-4380 §1(part), 1978.)

19.16.040 Report of existing unsanitary conditions. Reports that plumbing in any building is contrary to this chapter or is of faulty construction, liable to breed disease or sickness, or is a menace to health shall be made to the county health officer. (Ord. 61-4380 §1(part), 1978.)

19.16.050 Violation. The plumbing inspector or designee shall investigate all reports of improper or defective plumbing or drainage. If such investigation discloses violation of this title, the inspector shall notify the owner or tenant of such premises by registered mail or personal service to correct any such improper or defective installation within thirty days. Any person failing to comply with such notice shall be subject to the penalty provided in Chapter 19.52 of this title. (Ord. 61-4380 §1 (part), 1978.)

19.16.060 Certificate of occupancy. Upon completion of the plumbing work pursuant to the permit, the person doing the work shall notify the plumbing inspector, who shall inspect the work. If approved, the inspector shall issue a certificate of occupancy which shall contain the date of such inspection and a resume of the inspection. No such certificate shall be issued unless the plumbing work is in strict conformity with the rules and regulations set forth in this title. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.20

SEWERS

Sections:

19.20.010	Separate drains for each building.
19.20.020	Material, joints and connections.
19.20.030	Size.
19.20.040	Draining of waters into sanitary sewers.
19.20.050	Connection to sewer mains.
19.20.060	Location.
19.20.070	Connection requirements.
19.20.080	Drain ends protected.
19.20.090	Prohibited location.
19.20.100	Defective or inferior pipe prohibited.
19.20.110	Old pipe or drain.
19.20.120	Use of sewers.
19.20.125	External grease interceptors.
19.20.130	Shoring of trenches.
19.20.140	Backfilling.
19.20.150	Maintenance.

19.20.010 Separate drains for each building. Every building shall have a separate and independent connection with a public main sanitary sewer, private sewage disposal system, or private main sanitary sewer. A private main sanitary sewer shall conform to standard specifications of the city for public sewers and shall be approved by the plumbing inspector and city engineer. Manholes shall be located not less than twenty-five feet from any building. (Ord. 61-4380 §1(part), 1978.)

19.20.020 Material, joints and connections. All building sanitary and storm sewer piping extending from a public sewer or other disposal terminal to within three to five feet of the outside foundation walls shall be of material, joints and connections approved in the Wisconsin Administrative Code (WAC). The disposal terminal shall be described as the end of the sewer service lateral or private sewage disposal system; in the event no lateral has been installed, it shall be the city sewer main. A building sanitary or storm sewer connection to a private or public main sanitary or storm sewer shall conform to sections 19.20.050 and 19.20.070 of this chapter. (Ord. 61-4380 §1(part), 1978.)

19.20.030 Size. The size of building sewers shall be determined by the provisions of WAC. (Ord. 61-4380 §1(part), 1978.)

19.20.040 Draining of waters into sanitary sewers. The downspout or roof drain of any building, any air conditioner, or other clearwater cooling device, any cistern overflow, or any groundwater drain shall not be connected to any sanitary sewer, nor shall rain or surface water be drained directly or indirectly into any sanitary sewer.

(a) Disconnection. The owner of any building or land wherein there is a violation of the provisions of this section shall cause the violation to be corrected within six months after being notified in writing by the plumbing inspector, whose duty it shall be to enforce this section.

(b) Drainage. All drainage of waters enumerated in this section shall be made either directly into a storm sewer or into a public street or alley beyond the curb line, subject to the approval of the plumbing inspector. No person shall permit the drainage of water across any sidewalk or public area so as to cause or tend to cause any hazard or danger to pedestrians or users thereof. (Ord. 61-4380 §1(part), 1978.)

19.20.050 Connection to sewer mains. No person shall make a connection of any kind to a public sanitary or storm sewer, or replace or reconstruct any sanitary or storm sewer lateral without a permit from the plumbing inspector. Connections to any sanitary or storm sewer main pipe shall be done by city employees or their designees. Connections to manholes shall be performed privately with inspection by city employees. (Ord. 61-4778 §1(part), 1992; Ord. 61-4428 §1, 1979; Ord. 61-4380 §1(part), 1978.)

19.20.060 Location. The plumbing inspector, with the cooperation of the water and sewerage utilities, shall keep a proper sewer connection record in a book, card index, or plat provided for that purpose showing the location of the lot, the master plumber proposing to lay the sewer or drain, and of the exact location of the public sewer to each drain or sewer so laid. Information concerning the sizes, location and depth of public and private sewers or drains and the position of the branch, junction and appurtenances will be furnished by the water and sewerage utilities. All reasonable care will be taken to ensure the correctness of such information, but such correctness will not be guaranteed under any circumstances. When in accordance with the measurements furnished, the junction is not found within three feet of the point designated, an approved Y or T fitting shall be used and such connection shall be made under the direction of the plumbing inspector or designee in accordance with 19.20.050 of this Chapter. (When sewer laterals are not in the same trench as the water lateral, the installer of the lateral shall report to the utility the location of the lateral referenced from permanent points, i.e., property corners, manholes, hydrants, etc. In all cases, when the lateral is installed for future use a two-inch by four-inch board shall be placed at the end of the lateral to reach the ground surface, clearly marking the location of the pipe.) (Ord. 61-4778 §1(part), 1992; Ord. 61-4380 §1(part), 1978.)

19.20.070 Connection requirements. (a) Size. The connection shall be of the saddle type. The fitting used in the connection shall be made in such a manner as to ensure that no protrusion of the fitting into the main sewer pipe will result. The connector shall fit perfectly the contour of the inside of the sewer and shall be sufficiently designed to fit the particular size main sewer pipe into which the connection is made. The hole shall be of such size to provide one-eighth inch clearance between the outside of the fitting and the hole. The space so provided shall be completely filled with cement grout. The space between the shoulder of the fitting and the face of the main sewer pipe shall be one-eighth inch thick and this space shall be completely filled with cement grout. The connection shall be encased in concrete.

(b) Fitting. The fitting shall be of cast iron, concrete, vitrified clay, asbestos cement, plastic, bituminous fibre pipe, or other approved materials, and shall be capable of receiving the type of pipe used for the building sewer lateral.

(c) Fees. All taps will be billed on time and material basis. In cases, whereby the utility is inspecting the installation a flat fee of twenty-five dollars will be assessed in addition to the normal permit fees. (Ord. 61-4778 §1(part), 1992; Ord. 61-4428 §§2, 3, 4, 1979; Ord. 61-4380 §1(part), 1978.)

19.20.080 Drain ends protected. The ends of all sanitary sewer pipes not immediately connected shall be securely closed with a plug so as to prevent the introduction of sand, earth or drainage from an excavation. The ends of all sewer laterals installed for future use shall be sealed with a plug or cap of the same material as the lateral. (Ord. 61-4380 §1(part), 1978.)

19.20.090 Prohibited location. No water or sewer lateral, water service, or building sewer shall extend over or through any property description except the property served. Access shall be through a public right-of-way. (Ord. 61-4380 §1(part), 1978.)

19.20.100 Defective or inferior pipe prohibited. No person shall connect with any public sewer any pipe that is cracked, damaged, or of any inferior make or quality. Should any person furnish pipe of an inferior make or quality to connect with a public sewer, the master plumber shall refuse to install the same and shall immediately notify the plumbing inspector, who shall require that necessary change be made so as to conform with this chapter. (Ord. 61-4380 §1(part), 1978.)

19.20.110 Old pipe or drain. Whenever necessary to disturb a drain or sewer in actual use, the same shall not be obstructed nor discontinued without special permission of the plumbing inspector; and it is unlawful to make any new connections with or extensions to any old drain without permission of the plumbing inspector. (Ord. 61-4380 §1 (part), 1978.)

19.20.120 Use of sewers. No person shall deposit in any sewer or drain, garbage, gasoline, tar, grease, waste oil, rags, or other substances likely to cause obstruction, nuisance, or explosion therein, or to do any act which may cause injury thereto. Any person who violates any provisions of this section shall, in addition to the penalty prescribed in this chapter, be liable to the city for the cost of removing such obstruction and of repairing injury resulting therefrom. This section is in addition to and shall be read with Chapter 13.62 of this code. (Ord. 61-4380 §1(part), 1978.)

19.20.125 External Grease Interceptors. External grease interceptors shall be installed and maintained for all new restaurants, large kitchen operations, fast food establishments, etc. Existing businesses under extensive remodeling and where grease problems have been documented, the plumbing inspector may require installation of exterior grease interceptors as a condition of a plumbing permit. (Ord. 61-5121 §1, 2001, File No. 01-0615.)

19.20.130 Shoring of trenches. Whenever there is danger of caving, the sides of all trenches shall be supported with adequate sheeting and braces to comply with Industrial Commission Regulations, Ind. 6.01-6.02-6.03-6.06-6.12-6.21, WAC, a copy of which shall be on file in the city clerk's office. (Ord. 61-4380 §1(part), 1978.)

19.20.140 Backfilling (a) The backfilling of all trenches to a depth of twelve inches over the pipe shall comply with WAC, and shall be the direct responsibility of the plumbing inspector.

(b) The remainder of the backfilling of that portion of trenches within the public right-of-way, to the property side of the sidewalk line, shall be the responsibility of the excavating contractor and shall be as follows:

(1) The remainder of the backfilling, after foundations are prepared, with proper procedures as detailed in WAC, may consist of clay type soils with proper moisture content for maximum compaction, drying or wetting soils as needed and with mechanical compaction at time of back-filling. Backfilling shall be mechanically compacted in layers not to exceed eight inches in depth. The contractor shall have a vibratory-type compactor on the job site, in operating condition, before starting to backfill with clay type soils. Other backfill materials shall be limited to granular soil materials or rocky substances not exceeding one cubic foot in volume. Rocks shall be entirely enveloped by fine material. Compaction shall be to a minimum of ninety-five percent Proctor Density. Sandy soil shall have optimum moisture when mechanically compacted.

(2) Backfilling for pipe sewers may be done immediately after the placing by hand of fine backfill. Such backfilling may be carried on from the top of the trench by mechanical means, or by dumping directly from trucks, or by hand. The backfill in no case shall be dropped from such height or in such volume that its impact upon the sewer structure will cause damage.

(3) Trenches, where excavated material is sandy or granular, or where, at the option of the inspector, sandy or granular material is specially imported for backfill purposes, compaction may be obtained by jetting. Sandy or granular material shall pass a four-inch square sieve and shall not contain more than five percent of material which will pass a #200 sieve. It shall be of such character as to readily compact with water and shall permit excess water to pass through it quickly. Soils jetted shall be compacted to a minimum of ninety-five percent Proctor Density;

(A) The hose shall have a minimum diameter of two inches, and the pipe nozzle a minimum diameter of one and one-half inches and a minimum length of four feet. A hydrant regulating valve shall be provided by the contractor so that the hydrant, if one is used, can be fully opened while jetting is proceeding.

(B) During the jetting operations, the nozzles shall be inserted as deeply into the backfill as is possible without damaging the sewer structure or its foundation. The insertions shall be made at intervals of five feet or less and maintained unless the backfilling is saturated. Depressions caused by flooding shall be backfilled until there is no further settlement. Where city water is not available, mechanical compaction shall be used.

(Ord. 61-4380 §1(part), 1978.)

19.20.150 Maintenance. No person shall file any claim against the city for costs or damages for any repairs, replacements, or interrupted service of any sewer lateral. It shall be the responsibility of the owner of the property being served by any sewer lateral to maintain the entire lateral from a point including the connection to the sewer main and extending through the entire public right-of-way to the property line. (Ord. 61-4380 §1 (part), 1978.)

Chapter 19.24

CONNECTION TO WATER MAIN[2]

Sections:

19.24.010	Permit required.
19.24.020	Separate water service.
19.24.030	Material.
19.24.040	Size.
19.24.050	Valve controls.
19.24.060	Authority to control water service.
19.24.070	Compulsory connection to sewer and water.

19.24.010 Permit required. No connection to any public water main shall be made without a permit from the plumbing inspector. All such work shall be executed in compliance with city ordinances, laws and regulations of the state, or by any agency thereof. (Ord. 61-4380 §1 (part), 1978.)

19.24.020 Separate water service. Every building shall have a separate and independent connection with a public water main where provided in a public right-of-way abutting the property. (Ord. 61-4380 §1(part), 1978.)

19.24.030 Material. The underground water service pipe from the curb stop or a private water supply system to any building shall be of type "K" copper water tube or ductile iron water main. On a case by case basis, the plumbing inspector may consider other types of piping for underground water service pipe. Thawing of this type of piping will solely be the responsibility of the property owner or tenant. (Ord. 61-5119 §1, 2001, File No. 01-0613; Ord. 61-4380 §1(part), 1978.)

19.24.040 Size. The water service or building supply pipe to any building shall be sized in accordance with Wausau water utility regulations. (See 13.16.070 of this code.) The minimum size shall be one inch.

Water services accommodating future uses on existing vacant property shall be sized for the maximum land use of the property. The land use is to be determined by the Wausau municipal zoning ordinance in effect at the time of the installation of the water services. (Ord. 61-4380 §1(part), 1978.)

19.24.050 Valve controls. Service controls equal in size to the service piping shall include a valve shutoff at the main, a curb stop or valve at the curb, or privately-owned pump, and a gate, ball, or plug valve inside the foundation wall of each building where the meter is installed. A gate, ball, or plug valve equal to or larger than the meter size shall be provided on the outlet side of the

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[2] For compulsory connection, see Chapter 13.16 of this code.

meter. Service piping of one and one-half inches or over shall have a full size bypass around meter. (Ord. 61-4380 §1 (part), 1978.)

19.24.060 Authority to control water service. No plumber shall turn on, or leave turned on, any water service curb stop after the completion and trial of his work, which for any reason has been turned off by the water department. No unauthorized individual shall turn water on or off after it has been turned on or off from the given service. (Ord. 61-4380 §1(part), 1978.)

19.24.070 Compulsory connection to water. When notified, the owner of any building intended for human habitation or occupancy abutting on any street, alley, or other thoroughfare in which a public water main has been extended and is available for service, shall cause to be made a water supply connection thereto, and shall abandon any existing source of water except as may be permitted by special permit signed by the plumbing inspector. In all cases connection to public water supply will occur within one year after public water becomes available. If abandonment of private wells are an explicit condition of DNR approval for new construction of sanitary sewers per Wisconsin Administrative Code requirements, the Wausau sewerage utility will ensure the proper abandonment of private wells at no expense to the property owner. This will only apply to private wells within fifty feet of sixteen-inch or larger sanitary sewers which are constructed in the future. In these cases the property owner will be required to make immediate connection to the public water supply at his own expense as defined per this section in order to permit the timely abandonment of the private wells. Property owners affected by this provision will be notified no less than ninety days prior to this requirement. (See also Chapter 13.16 of this code.) (Ord. 61-4544 §4, 1984; Ord. 61-4380 §1(part), 1978.)

Chapter 19.30

PRIVATE WATER WELLS

Sections:

19.30.010 Purpose.
19.30.020 Definitions.
19.30.030 Private well permit.
19.30.040 Private well abandonment.
19.30.050 Penalties.

19.30.010 Purpose. This chapter regulates the construction and continued use of private wells within the city where public water service is provided. This chapter is also intended to prevent contamination of groundwater and to protect public health, safety and welfare by assuring that unused, unsafe or noncomplying wells or wells which may serve as conduits for contamination or wells which may be illegally cross-connected to the public water system are properly abandoned. (Ord. 61-4738 §1(part), 1991.)

19.30.020 Definitions. For the purpose of this chapter:

(a) "Municipal water system" means Wausau Water Works.

(b) "Noncomplying" means a well or pump installation which does not comply with the provisions of Chapter NR 812, Wisconsin Administrative Code, in effect at the time the well was constructed, a potential contamination source was installed, the pump was installed or work was done on either the well or pump installation.

(c) "Pump installation" means the pump and related equipment used for withdrawing water from a well including the discharge piping, the underground connections, pitless adapters, pressure tanks, pits, sampling faucets and well seals or caps.

(d) "Unsafe" means a well or pump installation which produces water which is bacteriologically contaminated or contaminated with substances exceeding the standards of Chs. NR 109 or 140, Wisconsin Administrative Code, or for which a health advisory has been issued by the Department of Natural Resources.

(e) "Unused" means a well or pump installation which is not in use or does not have a functional pumping system.

(f) "Well" means an excavation or opening into the ground made by digging, boring, drilling, driving, or other methods for the purpose of obtaining groundwater for consumption or other use.

(g) "Well abandonment" means the filling and sealing of a well according to the provisions of Ch. NR 812, Wisconsin Administrative Code. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-4738 §1(part), 1991.)

19.30.030 Private well permit. The plumbing inspector may grant a permit to a private well owner to operate a well for a period not to exceed five years, providing conditions of this code and other applicable state and health requirements are met. An owner may request an initial or renewal of a private well permit on an application form provided by Wausau Water Works. The permit request must clearly state the purpose of the well and ensure the following conditions have been met:

(a) The well and pump installation meet or are upgraded to meet the requirements of Ch. NR 812, Wisconsin Administrative Code;

(b) The well has been tested and verified bacteriologically safe as required by Wisconsin Administrative Code NR 811.10(2). The lab reports shall be attached to the permit application in cases of renewals;

(c) There are no cross-connections between the well and pump system and the municipal water system;

(d) The permit application for existing wells shall be reviewed by the utility director or environmental engineer prior to the permit issuance by the plumbing inspector. Requests for permits for new private water supply wells to be constructed within the city limits should be reviewed by the commission. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-5021 §1, 1999; Ord. 61-4738 §1(part), 1991.)

19.30.040 Private well abandonment. All wells located on premises served by the municipal water system shall be abandoned in accordance with the terms of this code and Ch. NR 812, Wisconsin Administrative Code, by August 31, 1991, or no later than one year from the date of connection to the municipal water system, whichever occurs last, unless a private well permit has been obtained by the well owner from the city as specified by this code.

All wells abandoned under the jurisdiction of this code or rule shall be abandoned according to the procedures and methods of Ch. NR 812, Wisconsin Administrative Code. All debris, pump, piping, unsealed liners and any other obstructions which may interfere with sealing operations shall be removed prior to abandonment.

An abandonment report form, supplied by the Department of Natural Resources, shall be submitted by the well owner to Wausau Water Works and the Department of Natural Resources within ten days of the completion of the well abandonment. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-4738 §1(part), 1991.)

19.30.050 Penalties. Any well owner violating any provision of this chapter shall upon conviction be punished by forfeiture of not less than twenty dollars nor more than one hundred dollars and the cost of prosecution. Each day of violation is a separate offense. If any person fails to comply with this chapter for more than ten days after receiving written notice of the violation, the

municipality may impose a penalty and cause the well abandonment to be performed and the expense to be assessed as a special tax against the property. (Ord. 61-4738 §1(part), 1991.)

Chapter 19.32

SWIMMING POOLS

Sections:

19.32.010 Public—Permit required.
19.32.020 Private—Permit required.

19.32.010 Public—Permit required. Before commencing the installation of a public swimming pool, a permit authorizing plumbing, mechanical and drainage work shall be obtained from the plumbing inspector. The application for a permit shall be accompanied by plans and specifications together with written approval from the State Board of Health, copies of which shall be filed with the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

19.32.020 Private—Permit required. Before commencing the installation of a private residential swimming pool, a permit authorizing plumbing, mechanical and drainage work shall be obtained from the plumbing inspector. The application for a permit shall be accompanied by plans and specifications showing the following in sufficient detail:

(a) Pool dimensions and volume of water in gallons;

(b) Type and size of filter system, filtration and backwash capabilities;

(c) Pool piping layout, showing pipe sizes, valves and type of materials;

(d) The rated capacity and head at filtration and backwash flows of the pool pump in gallons per minute with size and type of motor;

(e) Location and type of waste water disposal system. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.36

INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

Sections:

19.36.010 Allowable use.
19.36.020 Permit required—Restrictions.
19.36.030 Application for permits.
19.36.040 Construction.
19.36.050 Minimum size lots.
19.36.060 Industrial and commercial establishments.
19.36.070 Sewer system available.

19.36.010 Allowable use. Individual sewage disposal systems may be constructed where no public sewage system is available or likely to become available within a reasonable time. (Ord. 61-4380 §1(part), 1978.)

19.36.020 Permit required—Restrictions. (a) Permit to construct an individual sewage disposal system shall be obtained from the plumbing inspector.

(b) No permit to construct a private sewage disposal system shall be granted without written approval from the board of public works and the water and sewerage utility commission. (Ord. 61-4380 §1(part), 1978.)

19.36.030 Applications for permits. Applications for permits shall be in writing and include the following:

(a) Name and address of applicant;

(b) Legal description of property;

(c) Percolation test as required in Sections H62 and H65 of the Wisconsin Administrative Code;

(d) Complete plan of the proposed facility showing the location and size of all proposed disposal facilities, location of water supplies, buildings and lot lines. (Ord. 61-4380 §1(part), 1978.)

19.36.040 Construction. The entire disposal system shall comply with Section H62 of the Wisconsin Administrative Code. (Ord. 61-4380 §1(part), 1978.)

19.36.050 Minimum size lots. Under the absorption field requirements, it is apparent that in some areas individual sewage disposal systems cannot be used unless more than one lot is made available for this purpose, or alternate lots are held vacant until such time as public sewer systems have been installed, at which time additional construction on the remaining lots could be permitted. (Ord. 61-4380 §1(part), 1978.)

19.36.060 Industrial and commercial establishments. Individual sewage disposal systems as defined in this chapter involving septic tanks and absorption field shall be permitted for industrial and commercial establishments. Private disposal systems for such uses shall be by design of a competent registered engineer specializing in sanitation, plans for the installation having been approved by state and local authorities. (Ord. 61-4380 §1(part), 1978.)

19.36.070 Sewer system available. Private systems for sewage disposal shall be discontinued within one year after public sewers become available. The building sewer shall be discontinued from the old system and be reconnected with the public sewer. All abandoned septic tanks and seepage pits shall have the contents removed and shall be immediately filled with sand, gravel, or similar material. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.40

CROSS-CONNECTION TO WATER SERVICE

Sections:

19.40.010 Cross-connection regulations—Municipal code.
19.40.020 Enforcement authority.
19.40.030 State provisions adopted.

19.40.010 Cross-connection regulations—Municipal code. See Chapter 13.13 of this code. (Ord. 61-4666 §1(part), 1989.)

19.40.020 Enforcement authority. The plumbing inspector has the full authority and responsibility to enforce Chapter 13.13 of this code and the State Plumbing Code with reference to cross-connections. (Ord. 61-4666 §1(part), 1989.)

19.40.030 State provisions adopted. The city adopts by reference the State Plumbing Code of Wisconsin, Chapter ILHR 82 of the Wisconsin Administrative Code concerning cross-connections. (Ord. 61-4666 §1(part), 1989.)

Chapter 19.44

SPECIAL PROVISIONS

Sections:

19.44.010 Connections to water distribution system.
19.44.020 Trailer wastes.
19.44.030 Abandoned water and sewer service.
19.44.040 Parking lots and surface drains.
19.44.050 Catch basins and receptacles.
19.44.060 Subsoil or footing drains.
19.44.070 Catch basin ejectors.
19.44.080 Sump pumps.
19.44.090 Roof drains.
19.44.100 Mobile home and trailer camp regulations.

19.44.010 Connections to water distribution system. No valve or connection of any kind shall be tapped into the wall of any domestic water pipe, nor shall any saddle type of connection device be used except on a valved branch provided for this purpose. (Ord. 61-4380 §1(part), 1978.)

19.44.020 Trailer wastes. No person shall discharge the effluent from any trailer privy or disposal collector used in trailers for human habitation into any plumbing fixture not specifically designed for the reception of such effluent. (Ord. 61-4380 §1(part), 1978.)

19.44.030 Abandoned water and sewer service. Before a building is moved or demolished, the water services and building sewers shall be located at the property line. The water service and sewer shall be sealed off in the presence of the plumbing inspector. The plugs or seals shall not be covered until an approval has been given by the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

19.44.040 Parking lots and surface drains. (a) All parking lots shall meet the requirements of Chapter 15.52 of this code, and shall be provided with adequate yard drainage. Where a storm sewer is available and the lot is greater than seven thousand five hundred square feet in area, the lot shall be provided with interior yard drainage and shall be connected to the storm sewer. In all cases, drainage shall be to a terminal designated and approved by the city engineer and the plumbing inspector.

(b) The size of the storm sewer serving a parking lot shall be determined by the area to be drained and be approved by the city engineer.

(c) Catch basins and grate areas shall be to the standards of the city specifications. (Ord. 61-4739 §1, 1991; Ord. 61-4380 §1(part), 1978.)

19.44.050 Catch basins and receptacles. All storm or clearwater drain pipes that must be left open to drain basement areas, yards, gardens or other places shall be connected with suitable catch basins of brick, vitrified clay pipe, concrete or other suitable substance, the bottom of which

shall not be less than one-half foot below the bottom of the outlet pipe. Every such catch basin or receptacle shall be placed inside the lot line of the lot or lots to be drained. The installation of such basins or connections shall have the approval of the plumbing inspector and city engineer. (Ord. 61-4380 §1(part), 1978.)

19.44.060 Subsoil or footing drains. Where footing or subsoil drains are installed without or within the walls or footings of any building, they shall be discharged to an accessible catch basin not less than eighteen inches deep and twelve inches in diameter. The rim of such catch basin shall terminate not less than two inches above the basement floor and shall be located not less than ten feet from any building drain or branch. No catch basin will be required when footing or subsoil drains can be discharged to the storm sewer, a seepage pit or to the ground surface by gravity; provided, that the discharge point is within the property boundaries or to a public gutter and that no hazard or nuisance is created. (Ord. 61-4380 §1(part), 1978.)

19.44.070 Catch basin ejectors. When there are indications that indoor catch basins receiving the discharge of subsoil drains will discharge indirectly to the sanitary sewer, a sump pump, or ejector shall be installed to elevate the contents of the basin to a proper discharge point. (Ord. 61-4380 §1(part), 1978.)

19.44.080 Sump pumps. All sump pumps installed for the purpose of discharging clear waters from foundation drains and ground infiltration and where the building is not serviced by gravity shall either discharge into an underground conduit leading to a drainage ditch, gutter, dry well, or shall discharge onto the ground at least one foot or more out from the building and above permanent grade in such manner as not to create a nuisance. No sump discharge shall be allowed to flow on or across a public sidewalk. The discharge pipe shall not be reduced in size from the discharge opening left by the manufacturer. The discharge pipe from the pump opening to the outside of the building shall be rigidly secured. (Ord. 61-4380 §1 (part), 1978.)

19.44.090 Roof drains. Roof drains may discharge on the ground, provided such discharge does not create a nuisance. (Ord. 61-4380 §1(part), 1978.)

19.44.100 Mobile home and trailer camp regulations. (a) Mobile home parks shall be served by a private main sanitary sewer connected to the municipal sanitary sewer system. The connection from an individual mobile home to the private main sanitary sewer shall be adequately trapped and vented to conform with regulations set forth by state and local authorities.

(b) The size of the water service for a mobile home and trailer camp shall be determined by the number of units served and shall conform to the recommendations of the municipal water department superintendent, and the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

[INTENTIONALLY BLANK]

Chapter 19.48

INSURANCE

Sections:

19.48.010 Required.
19.48.020 Exceptions.

19.48.010 Required. Before permits are issued, each master plumber shall have in full force and effect public liability insurance in the amount of one hundred thousand dollars for each injury, three hundred thousand dollars personal injury for each accident and one hundred thousand dollars property damage and Workmen's Compensation insurance. Certificates of such insurance shall be filed with the city clerk, together with a statement by the insurance company, showing that such policies will not be canceled without extending ten days' written notice to the city clerk. No permits shall be lawfully issued and no plumbing work shall be installed or worked on unless such policies are in full force and effect. (Ord. 61-4380 §1(part), 1978.)

19.48.020 Exceptions. The requirements of section 19.48.010 of this chapter shall not apply to installed plumbing manufactured for shipment out of the city, to property owners or to licensed and registered maintenance plumbers obtaining permits for plumbing work within the complex of their employers business enterprise only. Section 19.48.010 shall apply to any work performed in a public right-of-way. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.52

PENALTIES

Sections:

19.52.010 Penalty for violation.

19.52.010 Penalty for violation. Any person who violates any provision of this title shall be subject to a penalty as provided in section 1.01.110 of this code. Each violation and each day on which a violation of any provision of this title occurs or continues shall constitute a separate offense. (Ord. 61-4380 §1(part), 1978.)

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name or FID below to view Location Details page for this Activity. Other Activities, if present, may be accessed from Location Details.

< Basic Search

CONTINUING OBLIGATIONS APPLY

Due to remaining contamination, continuing obligations apply to one or more properties. For information specific to the continuing obligations review the documentation below. Prior to constructing or reconstructing a water supply well, you need to contact DNR for approval of well construction specifications.

IMPACTED ANOTHER PROPERTY OR RIGHT-OF-WAY

A hazardous substance discharge originating from this property has impacted one or more other properties or right-of-ways (ROWS). For more information, please review the documents below. Certain exemptions regarding the cleanup of impacted properties under Wisconsin Stat. Section 292.13 may apply.

02-37-000017 WAUSAU GW CONTAMINATION (SF NPL)

OPEN ERP

Location Name (Click Location Name or FID to View Location Details)			County	WDNR Region
WAUSAU CTY WELL FIELD SUPERFUND			MARATHON	WEST CNTRL
Address			**Municipality**	
E RANDOLPH & CHERRY STS			WAUSAU	
PLSS Description	**Latitude**	**Longitude**	**Google Maps**	**RR Sites Map**
NE 1/4 of the SE 1/4 of Sec 23, T29N, R07E	44.977785	-89.633284	CLICK TO VIEW	CLICK TO VIEW
Additional Location Description			**Size (Acres)**	**Facility ID**
			UNKNOWN	737105820

Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action
DNR RR		WID980993521	1983-02-15		2019-09-26

Characteristics

PECFA Tracked?	EPA NPL Site?	EPA Superfund?	PECFA Funds Eligible?	Above Ground Tank?	Drycleaner?	Co-Contamination?	WI DOT Site?	COs Apply?
No	Yes	No	No	No	No	No	No	Yes

Actions

Place Cursor Over Action Code to View Description			
Date	**Code**	**Name**	**Comment**
1983-02-15	1	Notification of Hazardous Substance Discharge	
1983-02-15	301	Superfund NPL, NPL Proposed or Alternative Approach Site	301 DATE BASED ON FINAL NPL LISTING DATE
1984-03-05	350	Superfund Site Assessment Preliminary Assessment (PA)	
1986-06-10	99	Miscellaneous	NPL LISTING
1988-12-01	99	Miscellaneous	ROD INTERIM
1989-09-01	99	Miscellaneous	ROD
1989-09-02	99	Miscellaneous	RO CONSENT DECREE
1990-03-01	99	Miscellaneous	REMEDIAL DESIGN COMPLETE
1991-01-01	99	Miscellaneous	RA CONSENT DECREE
1992-01-01	211	Operation & Maintenance Start - State Lead	
1997-01-13	99	Miscellaneous	E. BANK SVE CLOSURE RPT
1997-03-17	99	Miscellaneous	DNR COMMENTS RE SVE CLOSURE. ADD'L WORK NEEDED.
1999-03-11	43	Site Activity Status Update Received	MONTHLY STATUS REPORT #95
1999-04-12	43	Site Activity Status Update Received	MONTHLY PROGRESS REPORT #96
1999-07-09	43	Site Activity Status Update Received	
1999-08-11	43	Site Activity Status Update Received	JULY
1999-08-24	43	Site Activity Status Update Received	
1999-08-31	99	Miscellaneous	MWS WC6A, WC6, TCT44 AND E30 ABANDONED.
1999-09-15	43	Site Activity Status Update Received	
1999-10-15	43	Site Activity Status Update Received	
1999-11-12	43	Site Activity Status Update Received	OCTOBER
1999-12-14	43	Site Activity Status Update Received	NOVEMBER
2000-01-11	99	Miscellaneous	DECEMBER 1999 STATUS
2000-02-07	43	Site Activity Status Update Received	
2000-03-10	43	Site Activity Status Update Received	FEBRUARY 2000
2000-04-07	43	Site Activity Status Update Received	MARCH 2000
2000-04-26	99	Miscellaneous	EPA COMMENTS ON GW MONITORING PLAN
2000-05-10	43	Site Activity Status Update Received	APRIL 2000
2000-06-14	43	Site Activity Status Update Received	MAY 2000
2000-07-10	99	Miscellaneous	FIVE YEAR REVIEW REPORT
2000-07-14	43	Site Activity Status Update Received	
2000-07-30	24	Long Term Monitoring Plan Received (non-Fee)	
2001-01-10	99	Miscellaneous	REQUEST FOR SEASONAL SHUTDOWN OF SVE
2001-03-14	99	Miscellaneous	2000 ANNUAL REPORT
2001-11-07	99	Miscellaneous	SITE VISIT AT WAUSAU CHEM.

2002-03-06	43	Site Activity Status Update Received	4 Q. EW1 REPORT.
2002-03-11	99	Miscellaneous	SOIL SAMPLE REPORT. REQUEST TO SHUT DOWN SVE.
2002-04-12	43	Site Activity Status Update Received	1 Q. EW1 REPORT.
2002-04-17	99	Miscellaneous	DNR REQUEST FOR GW REPORT
2002-05-29	43	Site Activity Status Update Received	
2002-07-12	43	Site Activity Status Update Received	PROGRESS REPORT ON EW1
2002-10-02	99	Miscellaneous	MEETING AT SITE
2002-11-04	43	Site Activity Status Update Received	RPT ON EW-1
2002-11-04	99	Miscellaneous	EW1 3RD QRT REPORT
2002-11-15	99	Miscellaneous	CRA PROPOSAL FOR GW MONITORING OF SVE SHUT OFF @ WCC
2002-11-26	99	Miscellaneous	DNR COMMENTS TO EPA
2002-12-02	99	Miscellaneous	AGENCY'S LETTER RE WAUSAU CHEM P & T
2002-12-02	99	Miscellaneous	AGENCY'S APPROVAL OF EAST SVE MONITORING PLAN
2003-02-07	99	Miscellaneous	02 4TH QRT. EW1 REPORT
2003-04-14	43	Site Activity Status Update Received	
2003-08-15	99	Miscellaneous	EW1 DISCHARGE RPT
2003-10-15	43	Site Activity Status Update Received	GW P & T STATUS
2004-04-22	43	Site Activity Status Update Received	1ST QRT 2004 P&T RPT
2004-04-23	43	Site Activity Status Update Received	2003 GW MON RPT
2004-07-16	99	Miscellaneous	DISCHARGE MONITORING REPORT
2004-11-01	99	Miscellaneous	QRTLY RPT ON EW-1
2005-01-21	99	Miscellaneous	4TH QRT 2004 - EWI DISCHARGE REPORT
2005-06-30	99	Miscellaneous	5 YEAR REVIEW SIGNED
2005-08-15	43	Site Activity Status Update Received	ANNUAL MONITORING REPORT
2005-11-14	43	Site Activity Status Update Received	EW 1 REPORT RECEIVED
2006-02-06	43	Site Activity Status Update Received	QUARTERLY GWE REPORT
2006-04-13	99	Miscellaneous	DRAFT DEED RESTRICTION & DEEDS FOR WAUSAU CHEMICAL PROPERTY REC'D
2006-04-25	99	Miscellaneous	EWI DISCHARGE REPORT
2006-12-05	99	Miscellaneous	SITE VISIT & MEET EPA & MARATHON ELECTRIC.
2007-04-26	99	Miscellaneous	DEED RESTRICTION AT WAUSAU CHEMICAL RECORDED.
2007-08-31	99	Miscellaneous	DEED RESTRICTION FOR WAUSAU CHEMICAL REC'D.
2007-09-26	99	Miscellaneous	USEPA WITH WDNR CONCUR APPROVAL TO CLOSE EAST BANK SVE SYSTEM.

2008-04-18	43	Site Activity Status Update Received	2005-06 GW REPORT.
2008-09-02	43	Site Activity Status Update Received	EW1 REPORT
2008-10-24	43	Site Activity Status Update Received	3RD QUARTER 2008 DMR
2009-02-27	43	Site Activity Status Update Received	2007 ANNUAL MONTIROING REPORT.
2009-04-23	43	Site Activity Status Update Received	FIRST QUARTER PROGRESS REPORT
2009-06-22	43	Site Activity Status Update Received	2008 ANNUAL REPORT
2009-07-06	43	Site Activity Status Update Received	2ND QTR EW1 TREATMENT & DISCHARGE RESULTS REC'D.
2009-11-09	43	Site Activity Status Update Received	3RD QTR EW1 TREATMENT & DISCHARGE RESULTS REC'D.
2010-01-15	43	Site Activity Status Update Received	4TH QTR EW1 TREATMENT & DISCHARGE RESULTS REC'D.
2010-03-08	43	Site Activity Status Update Received	2009 ANNUAL MONITORING REPORT
2010-04-09	326	Superfund Five Year Review Report Signed	
2010-04-16	43	Site Activity Status Update Received	FIRSTS QTR 2010 EWI TREATMENT & DISCHARGE RESULTS REC'D.
2010-07-19	43	Site Activity Status Update Received	SECOND QUARTER 2010 EW1 TREATMENT & DISCHARGE RESULTS REC'D.
2010-07-29	236	Continuing Obligation - Residual GW Contamination	
2010-07-29	50	GIS Registry Site	
2010-07-29	149	Remedial Action (RA) Design Report Approved	
2010-07-29	220	Continuing Obligation - Soil at Industrial Levels	
2010-07-29	222	Continuing Obligation - Maintain Cap Over Contaminated Area	
2010-07-29	224	Continuing Obligation - Structural Impediment to Cleanup	
2010-07-29	228	Continuing Obligation - Site Specific Condition	GW PUMP & TREAT ON MARATHON ELECTRIC COP PARCEL.
2010-07-29	56	Continuing Obligation(s) Applied	
For Code 56:	20100729_56_CO_Packet.pdf Click to Download or Open		
2010-07-29	232	Continuing Obligation - Residual Soil Contamination	
2010-10-14	43	Site Activity Status Update Received	3RD QTR 2010 EW1 TREATMENT & DISCHARGE RESUTLS.
2010-11-03	99	Miscellaneous	SITE VISIT
2010-11-18	401	Historic Fill Case by Case Exemption Request (fee)	CK# 595883
2010-12-28	402	Historic Fill Case by Case Exemption Issued	
2011-01-28	43	Site Activity Status Update Received	4TH QTR 2010 EW1 TREATMENT & DISCHARGE RESULTS REC'D.
2011-04-05	43	Site Activity Status Update Received	2010 ANNUAL MONITORING REPORT RECEIVED

2011-07-26	43	Site Activity Status Update Received	1ST & 2ND QUARTER 2011 EW1 TREATMENT & DISCHARGE RESULTS RECEIVED; NEW PUMP & WELL REHAB
2011-09-07	130	DNR Regulatory Reminder Sent	Vapor Intrusion (VI) Assessment Notification Ltr Sent
For Code 130:	0237000017_VI_Letter.pdf Click to Download or Open		
2011-10-19	43	Site Activity Status Update Received	3RD QRT 2011 EW1 TREATMENT & DISCHARGE RESULTS REC'D
2012-01-10	43	Site Activity Status Update Received	4TH QRT 2011 EW1 TREATMENT & DISCHARGE RESULTS REC'D
2012-04-05	43	Site Activity Status Update Received	1ST QTR 2012 EW- 1 TREATMENT & DISCHARGE RESULTS REC'D
2012-04-25	43	Site Activity Status Update Received	2011 ANNUAL MONITORING RPT REC'D
2012-05-03	99	Miscellaneous	EMAIL TO EPA RPM CONCURRING W/ CONSULTANT RECOMMENDATIONS
2012-09-19	99	Miscellaneous	E24/E24A MW ABANDONMENT & REPLACEMENT DOCUMENTATION REC'D
2012-09-26	99	Miscellaneous	SITE VISIT W/ EPA RPM & CONSULTANT
2012-10-10	99	Miscellaneous	EMAIL TO USEPA RPM FOLLOW UP FROM SITE VISIT
2012-10-16	99	Miscellaneous	HISTORICAL GW RESULTS & WELL LOGS REC'D FROM CONSULTANT
2012-10-17	99	Miscellaneous	3RD QTR 2012 EW1 TREATMENT & DISCHARGE RESULTS REC'D
2013-02-08	99	Miscellaneous	CONF CALL W/ EPA, CONSULTANT RE: EW1 SHUTDOWN
2013-03-01	99	Miscellaneous	DRAFT EVALUATION EW1 SHUTDOWN REC'D
2013-03-15	99	Miscellaneous	CONF CALL W/ EPA, CONSULTANT RE: EW1 SHUTDOWN
2013-04-23	43	Site Activity Status Update Received	2012 ANNUAL MONITORING REPORT REC'D
2013-04-24	43	Site Activity Status Update Received	1ST QTR 2013 EW-1 TREATMENT & DISCHARGE RESULTS REC'D
2013-04-26	99	Miscellaneous	CONF CALL W/ EPA & CONSULTANT
2013-04-26	99	Miscellaneous	COMMENTS PROVIDED ON DRAFT EW1 PILOT STUDY PROPOSAL
2013-05-17	99	Miscellaneous	CONF CALL W/ EPA &

			CONSULTANT
2013-05-20	99	Miscellaneous	REQUEST TO ABANDON WC-3 REC'D
2013-05-31	99	Miscellaneous	HISTORICAL GW DATA REC'D
2013-06-05	99	Miscellaneous	DRAFT PILOT STUDY PROPOSAL REC'D
2013-06-06	99	Miscellaneous	RESPONSE TO COMMENTS REC'D
2013-06-18	99	Miscellaneous	CONF CALL W/ EPA & CONSULTANT
2013-09-09	99	Miscellaneous	EW1 SHUTDOWN PILOT STUDY WORK PLAN REC'D
2014-01-31	99	Miscellaneous	CONF CALL TO DISCUSS SITE REDEVELOPMENT PLANS
2014-02-11	43	Site Activity Status Update Received	2013 ANNUAL MONITORING RPT REC'D
2014-03-06	99	Miscellaneous	MEETING W/ CITY OF WAUSAU TO DISCUSS REDEVELOPMENT OF WAUSAU CHEMICAL PROPERTY
2014-03-19	99	Miscellaneous	CONF CALL W/ EPA TO DISCUSS REDEVELOPMENT OF WAUSAU CHEMICAL PROPERTY
2014-04-07	99	Miscellaneous	LETTER TO CITY OF WAUSAU & EPA ADDRESSING REDEVELOPMENT OF WAUSAU CHEMICAL PROPERTY
2014-05-01	43	Site Activity Status Update Received	EW1 SHUTDOWN PILOT STUDY 1ST QTR RESULTS REC'D
2014-05-16	401	Historic Fill Case by Case Exemption Request (fee)	CH# 900262349
2014-05-19	402	Historic Fill Case by Case Exemption Issued	CASE BY CASE EXEMPTION APPROVAL LTR ISSUED. WPS POLE INSTALLATION ON FMR LF
2014-07-25	99	Miscellaneous	REC'D REQUEST TO ABANDON E23A
2014-07-28	43	Site Activity Status Update Received	EW1 SHUTDOWN PILOT STUDY 2ND QTR RESULTS REC'D
2014-10-21	43	Site Activity Status Update Received	E23A WELL ABANDONMENT REPORT RECEIVED
2014-10-29	43	Site Activity Status Update Received	WAUSAU GW CONTAMINATION/EW1 SHUTDOWN PILOT STUDY 3RD QTR RESULTS REC'D
2015-03-05	43	Site Activity Status Update Received	ANNUAL RPT AND EW1 PILOT STUDY 2014
For Code 43:	03052015_43_Ann_Rpt_and_EW1_Pilot_Study_Rpt_2014.pdf	Click to Download or Open	
2015-03-05	43	Site Activity Status Update Received	2014 ANNUAL MONITORING REPORT

2015-09-08	305	Superfund Enforcement Documents - See Description	LIMITED SI RESULTS RECEIVED FROM WAUSAU CHEMICAL PROPERTY
2016-03-07	43	Site Activity Status Update Received	2015 ANN MONITORING REPORT REC
2016-03-24	35	Site Investigation Workplan (SIWP) Received (non-fee)	VI EVAL WORK PLAN RECD
2016-10-13	43	Site Activity Status Update Received	REVISED 2015 ANNUAL MONITORING REPORT REC
2017-03-03	35	Site Investigation Workplan (SIWP) Received (non-fee)	REVISED VI EVAL WORK PLAN RECD
2017-04-19	43	Site Activity Status Update Received	2016 ANNUAL MONITORING RPT
For Code 43:	20170419_43_Annual_Rpt.pdf Click to Download or Open		
2017-05-23	99	Miscellaneous	SUB-SLAB & IA SAMPLING RESULTS SENT TO RESIDENTS
For Code 99:	20170523_99_Sub_Slab_Air_Results.pdf Click to Download or Open		
2017-11-15	99	Miscellaneous	SITE VISIT & MTG W/USA EPA & CONSULTANT
2018-01-18	43	Site Activity Status Update Received	EW SHUTDOWN PILOT STUDY ADDENDUM
For Code 43:	20180118_43_EW1_Pilot Shutdown Study_Addendum.pdf Click to Download or Open		
2018-01-26	195	Semi-Annual/PECFA Cost Reporting (NR700) Requirement Met	Period: 7/1/2017 - 12/31/2017
Click 195 Action Name above to view NR700.11 report			
2018-02-28	43	Site Activity Status Update Received	2017 ANN MONITORING RPT
For Code 43:	20180228_43_GW_Monitoring_Rpt_Ann_2017.pdf Click to Download or Open		
2018-07-09	195	Semi-Annual/PECFA Cost Reporting (NR700) Requirement Met	Period: 1/1/2018 - 6/30/2018
Click 195 Action Name above to view NR700.11 report			
2018-07-25	43	Site Activity Status Update Received	EW1 SHUTOWN PILOT STUDY ADDENDUM
For Code 43:	20180725_Draft_EW1_Shutdown_Pilot_Study_Addendum.pdf Click to Download or Open		
2018-11-02	99	Miscellaneous	REQUEST FOR ACCESS LTRS (5)
For Code 99:	20181102_99_REQUEST FOR ACCESS LTRS_20181031.pdf Click to Download or Open		
2018-11-02	99	Miscellaneous	SUB-SLAB/INDOOR AIR RESULTS LTRS (5)
For Code 99:	20181102_99_SS_IA_RESULTS_LTRS_20181031.pdf Click to Download or Open		
2019-01-03	195	Semi-Annual/PECFA Cost Reporting (NR700) Requirement Met	Period: 7/1/2018 - 12/31/2018
Click 195 Action Name above to view NR700.11 report			
2019-05-06	99	Miscellaneous	DRAFT EW-1 SHUTDOWN RPT
For Code 99:	20190506_99_DRAFT_EW1_SHUTDOWN_RPT.pdf Click to Download or Open		
2019-05-06	43	Site Activity Status Update Received	EW-1 SHUTDOWN PILOT STUDY REPORT
For Code 43:	20190506_43_EW1_Pilot_Shutdown_RPT.pdf Click to Download or Open		
2019-05-09	43	Site Activity Status Update Received	EW-1 SHUTDOWN PILOT STUDDY ADDENDUM

For Code 43:	20190509_43_EW1_Pilot_Shutdown_Adden.pdf Click to Download or Open		
2019-09-26	99	Miscellaneous	NOTICE OF PURCHASE AGREEMENT - WAUSAU CHEMICAL AND CITY OF WAUSAU
For Code 99:	20190926_99_Wausau_Chem_Purchase.pdf Click to Download or Open		

Other Documents and Images Not Linked to Actions Above
Click File Name to Download or Open

Category	File Name or URL Description
Website URL	Wausau GW Contam. EPA Superfund NPL/SAA Website

Substances

Substance	Type	Est Amt Released	Units
Chlorinated Solvents	VOC		
Perchloroethylene	VOC		
Chlorinated Solvents	VOC		
Volatile Organic Compounds	VOC		

Who

Role	Name/Address
Responsible Party	MARATHON COUNTY 500 FOREST ST WAUSAU, WI 54403
Project Manager	MATT THOMPSON 1300 W CLAIREMONT AVE EAU CLAIRE, WI 54701

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the disclaimers page for more information. We welcome your Feedback.

Ongoing Cleanups with Continuing Obligations
Cover Sheet

April, 2010
(RR 5391)

Purpose

This cover sheet summarizes continuing obligations regarding environmental conditions on this property. Continuing obligations are legal mechanisms that:

1) Require or restrict certain actions to protect human health or the environment.
2) Minimize human and natural resource exposure to contamination, and/or
3) Give notice of the **existence** of residual contamination

Learn more about continuing obligations at **http://dnr.wi.gov/org/aw/rr/cleanup/obligations.htm**

DNR Property Information:

DNR Approval Date: Sep 29, 1989

BRRTS #: **02-37-000017** FID #: 737105820

ACTIVITY NAME: Wausau Groundwater Contamination Superfund

PROPERTY ADDRESS: SE corner E. Randolph St. & Cherry St., and SE corner Wausau Ave. & N. River Dr.

MUNICIPALITY: Wausau

PARCEL ID #: 291-2907-252-0990, 291-2907-252-0997

***WTM COORDINATES:**

X: **548901** Y: **500533**

** Coordinates are in WTM83, NAD83 (1991)*

WTM COORDINATES REPRESENT:

- (•) Approximate Center Of Continuing Obligations
- ( ) Approximate Source Parcel Center

Please use the CLEAN system at **http://dnr.wi.gov/org/aw/rr/clean.htm** for additional DNR site information.

EPA Superfund Information (*if applicable*):

EPA ID: **WID980993521** *To view more information click on the EPA ID.*

SITE NAME: Wausau Ground Water Contamination

Requirements for *all* properties with Continuing Obligations

1. Properly manage contaminated soil if it is excavated. Sample and arrange appropriate treatment or disposal.
2. DNR approval is required if a water supply well will be constructed or reconstructed.

Site-Specific Requirement(s) - (BRRTS Action Code)

- [X] A "cap" over the contaminated area must be: (222)
  - [ ] Constructed & Maintained
  - [X] Maintained
- [ ] A vapor mitigation system must be: (226)
  - [ ] Constructed & Maintained
  - [ ] Maintained
- [ ] The need for vapor control technology must be evaluated if a building will be constructed. (228)
- [X] The approved soil cleanup level is suitable for industrial use of the property. (220)
- [ ] DNR has approved construction on an abandoned landfill and certain maintenance requirements apply. (402) or (404)
- [X] A structural impediment (e.g. building) is present which inhibited investigation/cleanup. Further environment work may be required if the impediment is removed. (224)
- [ ] DNR has directed a local government unit (LGU) to take an action and a LGU liability exemption applies. This exemption does not transfer to future private owners. (230)
- [X] Another type of continuing obligation has been established in DNR's remedial action plan approval. (228)
  Explain:

Groundwater pump and treat system in operation on Marathon Electric Corporation parcel, will need to be inspected and maintained.

Appendix H

VOC Analytical Results in Water Effluent at the Wausau Water Supply (2018/2019) and CityWater Supply Well CW-3 VOC Concentration Trend

DNR Drinking Water Program
West Central Region Headquarters
1300 W. Clairemont Ave.
Eau Claire, WI 54701

VOLATILE ORGANIC ANALYSES

(ENCLOSE FORM WHEN SENDING SAMPLE TO LAB)

Rev: 02/18

Section I: To be completed by the Department of Natural Resources/SAMPLER

System Name: **WAUSAU WATERWORKS** System Type: (Check one) MC **X** NN___ OC___ TN___

System Address: **407 GRANT ST** City: **WAUSAU** County: **37 - Marathon** Region Code: **6**

Pws Id#: **73701023** Entry Point ID: **200** WI Unique Well No: _____ DNR Contact: **GLENN FALKOWSKI (715) 359-5284**

Sampler Phone/Name/Address **(Notify DNR Contact of Corrections)**

(715) 571-7752
WATER SUPERINTENDENT SCOTT BOERS
407 GRANT STREET
WAUSAU WI 54403

Sampler: Provide information to have results faxed or e-mailed or to change a billing address, if your lab offers these services (leave blank if you don't use these services).

Fax number: _____

E-mail: _____

Billing address: _____

Sample Source:

___ W Well
X E Entry Point
___ D Distribution System

Sample Type:

X D Compliance Sample
___ C Confirmation Sample
___ I Investigation Sample
___ W Raw Water Sample

Special Instructions: _____

Collect sample between: 01 /01 /2018 and 09 /30 /2018

Section II: To be completed by SAMPLER -- ALL ITEMS REQUIRED

Sample Collection Date: ____/____/_____ (mm dd yyyy) Time: ____ : ____ ☐ a.m. ☐ p.m.

Address where sample was collected: _____

Monitoring Point ID: _____ Sample Point Description: _____

First Initial and Last Name of Sampler: ___ - _____ Sampler Phone: _____

Section III: To be completed by LAB. Report test results on back for PWS and electronically to DNR within 10 days per NR 809.80

☐ **Check here if some or all of the parameters were analyzed by a subcontracted lab.**
NOTE: A separate form must be completed by each lab with data for only the parameters which that lab analyzed.

Laboratory ID Number: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Laboratory Name: _____

Date Sample Received: ____/____/_____ Time Sample Received: ___ ___ : ___ ___ Laboratory Sample ID: ___ ___ ___ ___ ___ ___ ___ ___

Signature of Receiving Lab Official: _____ Date Reported to PWS: ____/____/_____

Condition of Sample Upon Receipt: _____

Notice: This form must be submitted with laboratory samples analyzed to determine compliance with ch. NR 809, Wis. Adm. Code, Safe Drinking Water. Completion of this form or a similar form approved by the Department is mandatory. Failure to submit a completed form to the Department is a violation punishable by a forfeiture of no less than $10 nor more than $5000, or by a fine of not less than $10 nor more than $100 or imprisonment of not less than 30 days, or both. Each day of continued violation is a separate offense (ss. 144.99, Wis. Stats.). Authorization for these requirement is under s. 280.13(d), Wis. Stats. and ch. NR 809.80. Personally identifiable information on this form will be used for no other purpose.

VOLATILE ORGANIC ANALYSES

System Name: WAUSAU WATERWORKS

PWS ID: 73701023

This page to be completed by the laboratory performing analysis.

Lab Sample ID: _____

Storet Code		Parameter	SDWA Method	MDL	Results	MCL	Units
34030		BENZENE				5	UG/L
81555		BROMOBENZENE					UG/L
32101		BROMODICHLOROMETHANE				80	UG/L
32104		BROMOFORM				80	UG/L
34413		BROMOMETHANE					UG/L
32102		CARBON TETRACHLORIDE				5	UG/L
34311		CHLOROETHANE					UG/L
32106		CHLOROFORM				80	UG/L
34418		CHLOROMETHANE					UG/L
77275		O-CHLOROTOLUENE					UG/L
77277		P-CHLOROTOLUENE					UG/L
32105		DIBROMOCHLOROMETHANE				80	UG/L
77596		DIBROMOMETHANE					UG/L
34566		1,3-DICHLOROBENZENE (M-)					UG/L
34536		1,2-DICHLOROBENZENE (O-)				600	UG/L
34571		1,4-DICHLOROBENZENE (P-)				75	UG/L
34668		DICHLORODIFLUOROMETHANE					UG/L
34496		1,1-DICHLOROETHANE					UG/L
34531		1,2-DICHLOROETHANE				5	UG/L
34501		1,1-DICHLOROETHYLENE				7	UG/L
77093		1,2-DICHLOROETHYLENE CIS				70	UG/L
34546		1,2-DICHLOROETHYLENE, TRA				100	UG/L
34423		DICHLOROMETHANE				5	UG/L
34541		1,2-DICHLOROPROPANE				5	UG/L
77173		1,3-DICHLOROPROPANE					UG/L
77170		2,2-DICHLOROPROPANE					UG/L
77168		1,1-DICHLOROPROPENE					UG/L
34561		1,3-DICHLOROPROPENE					UG/L
34371		ETHYL BENZENE				700	UG/L
81688		ETHYLENE GYLCOL					
71880		FORMALDEHYDE					
34391		HEXACHLOROBUTADIENE					UG/L
77223		ISOPROPYLBENZENE					UG/L
77356		ISOPROPYLTOLUENE P					UG/L
77885		METHANOL					
78032		METHYL T-BUTYL ETHER					UG/L
34301		CHLOROBENZENE				100	UG/L
34696		NAPHTHALENE					UG/L
77128		STYRENE				100	UG/L
77562		1,1,1,2 TETRACHLOROETHANE					UG/L
34516		1,1,2,2 TETRACHLOROETHANE					UG/L
34475		TETRACHLOROETHYLENE				5	UG/L
34010		TOLUENE				1000	UG/L
34551		1,2,4-TRICHLOROBENZENE				70	UG/L
34506		1,1,1-TRICHLOROETHANE				200	UG/L
34511		1,1,2-TRICHLOROETHANE				5	UG/L
39180		TRICHLOROETHYLENE				5	UG/L
34488		TRICHLOROFLUOROMETHANE					UG/L
77443		1,2,3-TRICHLOROPROPANE					UG/L
81611		TRICHLOROTRIFLUOROETHANE					UG/L
77222		1,2,4-TRIMETHYLBENZENE					UG/L
77226		1,3,5-TRIMETHYLBENZENE					UG/L
39175		VINYL CHLORIDE				0.2	UG/L
79724		XYLENE TOTAL				10000	UG/L
77038		PROPYLENE GLYCOL					UG/L

Approved By: QA Officer: _____ Date: _____

Laboratory Manager: _____ Date: _____

Comments: _____

98965		1,3-PROPANEDIOL					MG/L

DNR Drinking Water Program
West Central Region Headquarters
1300 W. Clairemont Ave.
Eau Claire, WI 54701

VOLATILE ORGANIC ANALYSES

(ENCLOSE FORM WHEN SENDING SAMPLE TO LAB)

Rev: 02/18

Section I: To be completed by the Department of Natural Resources/SAMPLER

System Name: **WAUSAU WATERWORKS** System Type: (Check one) MC **X** NN___ OC___ TN___

System Address: **407 GRANT ST** City: **WAUSAU** County: **37 - Marathon** Region Code: **6**

Pws Id#: **73701023** Entry Point ID: **300** WI Unique Well No: _____ DNR Contact: **GLENN FALKOWSKI (715) 359-5284**

Sampler Phone/Name/Address **(Notify DNR Contact of Corrections)**

(715) 571-7752
WATER SUPERINTENDENT SCOTT BOERS
407 GRANT STREET
WAUSAU WI 54403

Sampler: Provide information to have results faxed or e-mailed or to change a billing address, if your lab offers these services (leave blank if you don't use these services).

Fax number: _____

E-mail: _____

Billing address: _____

Sample Source:

- ___ W Well
- **X** E Entry Point
- ___ D Distribution System

Sample Type:

- **X** D Compliance Sample
- ___ C Confirmation Sample
- ___ I Investigation Sample
- ___ W Raw Water Sample

Special Instructions: _____

Collect sample between: 01 /01 /2018 and 09 /30 /2018

Section II: To be completed by SAMPLER -- ALL ITEMS REQUIRED

Sample Collection Date: ____/____/_____ (mm dd yyyy) Time: ____ : ____ ☐ a.m. ☐ p.m.

Address where sample was collected: _____

Monitoring Point ID: _____ Sample Point Description: _____

First Initial and Last Name of Sampler: ___ - _____ Sampler Phone: _____

Section III: To be completed by LAB. Report test results on back for PWS and electronically to DNR within 10 days per NR 809.80

☐ **Check here if some or all of the parameters were analyzed by a subcontracted lab.**
NOTE: A separate form must be completed by each lab with data for only the parameters which that lab analyzed.

Laboratory ID Number: ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Laboratory Name: _____

Date Sample Received: ____/____/_____ Time Sample Received: ___ ___ : ___ ___ Laboratory Sample ID: ___ ___ ___ ___ ___ ___ ___ ___

Signature of Receiving Lab Official: _____ Date Reported to PWS: ____/____/_____

Condition of Sample Upon Receipt: _____

Notice: This form must be submitted with laboratory samples analyzed to determine compliance with ch. NR 809, Wis. Adm. Code, Safe Drinking Water. Completion of this form or a similar form approved by the Department is mandatory. Failure to submit a completed form to the Department is a violation punishable by a forfeiture of no less than $10 nor more than $5000, or by a fine of not less than $10 nor more than $100 or imprisonment of not less than 30 days, or both. Each day of continued violation is a separate offense (ss. 144.99, Wis. Stats.). Authorization for these requirement is under s. 280.13(d), Wis. Stats. and ch. NR 809.80. Personally identifiable information on this form will be used for no other purpose.

VOLATILE ORGANIC ANALYSES

System Name: WAUSAU WATERWORKS

PWS ID: 73701023

This page to be completed by the laboratory performing analysis.

Lab Sample ID: _____

Storet Code		Parameter	SDWA Method	MDL	Results	MCL	Units
34030		BENZENE				5	UG/L
81555		BROMOBENZENE					UG/L
32101		BROMODICHLOROMETHANE				80	UG/L
32104		BROMOFORM				80	UG/L
34413		BROMOMETHANE					UG/L
32102		CARBON TETRACHLORIDE				5	UG/L
34311		CHLOROETHANE					UG/L
32106		CHLOROFORM				80	UG/L
34418		CHLOROMETHANE					UG/L
77275		O-CHLOROTOLUENE					UG/L
77277		P-CHLOROTOLUENE					UG/L
32105		DIBROMOCHLOROMETHANE				80	UG/L
77596		DIBROMOMETHANE					UG/L
34566		1,3-DICHLOROBENZENE (M-)					UG/L
34536		1,2-DICHLOROBENZENE (O-)				600	UG/L
34571		1,4-DICHLOROBENZENE (P-)				75	UG/L
34668		DICHLORODIFLUOROMETHANE					UG/L
34496		1,1-DICHLOROETHANE					UG/L
34531		1,2-DICHLOROETHANE				5	UG/L
34501		1,1-DICHLOROETHYLENE				7	UG/L
77093		1,2-DICHLOROETHYLENE CIS				70	UG/L
34546		1,2-DICHLOROETHYLENE, TRA				100	UG/L
34423		DICHLOROMETHANE				5	UG/L
34541		1,2-DICHLOROPROPANE				5	UG/L
77173		1,3-DICHLOROPROPANE					UG/L
77170		2,2-DICHLOROPROPANE					UG/L
77168		1,1-DICHLOROPROPENE					UG/L
34561		1,3-DICHLOROPROPENE					UG/L
34371		ETHYL BENZENE				700	UG/L
81688		ETHYLENE GYLCOL					
71880		FORMALDEHYDE					
34391		HEXACHLOROBUTADIENE					UG/L
77223		ISOPROPYLBENZENE					UG/L
77356		ISOPROPYLTOLUENE P					UG/L
77885		METHANOL					
78032		METHYL T-BUTYL ETHER					UG/L
34301		CHLOROBENZENE				100	UG/L
34696		NAPHTHALENE					UG/L
77128		STYRENE				100	UG/L
77562		1,1,1,2 TETRACHLOROETHANE					UG/L
34516		1,1,2,2 TETRACHLOROETHANE					UG/L
34475		TETRACHLOROETHYLENE				5	UG/L
34010		TOLUENE				1000	UG/L
34551		1,2,4-TRICHLOROBENZENE				70	UG/L
34506		1,1,1-TRICHLOROETHANE				200	UG/L
34511		1,1,2-TRICHLOROETHANE				5	UG/L
39180		TRICHLOROETHYLENE				5	UG/L
34488		TRICHLOROFLUOROMETHANE					UG/L
77443		1,2,3-TRICHLOROPROPANE					UG/L
81611		TRICHLOROTRIFLUOROETHANE					UG/L
77222		1,2,4-TRIMETHYLBENZENE					UG/L
77226		1,3,5-TRIMETHYLBENZENE					UG/L
39175		VINYL CHLORIDE				0.2	UG/L
79724		XYLENE TOTAL				10000	UG/L
77038		PROPYLENE GLYCOL					UG/L

Approved By: QA Officer: _____ Date: _____

Laboratory Manager: _____ Date: _____

Comments: _____

98965		1,3-PROPANEDIOL					MG/L

Wisconsin Department of Natural Resources

Public Drinking Water System Data

Volatile Organics Sample 9/26/2019 WAUSAU WATERWORKS (73701023)

Sample Group	Volatile Organics	**Sample ID**	1151343
Source ID	200	**Well #**	
Sample Date	9/26/2019	**Sample Time**	910
Site ID	200	**Sample Description**	
Sample Type	Compliance	**Reported Date**	10/24/2019
Sample Source	Entry Point	**# Taken**	1
Sample Collector	D JENSEN		
Lab ID	721026460	**Lab Name**	Northern Lake Service Inc. (Crandon)
Reason for No Results		**Lab Comment**	

Sampling Results

Show All entries Filter:

Storet Code	Description	Result	Units	Qualifier	MCL	MCL Unit
2990	BENZENE	0	UG/L	Non-detect	5	UG/L
2993	BROMOBENZENE	0	UG/L	Non-detect		UG/L
2943	BROMODICHLOROMETHANE	0.38	UG/L	Between LOD and LOQ	80	UG/L
2942	BROMOFORM	0	UG/L	Non-detect	80	UG/L
2214	BROMOMETHANE	0	UG/L	Non-detect		UG/L
2982	CARBON TETRACHLORIDE	0	UG/L	Non-detect	5	UG/L
2216	CHLOROETHANE	0	UG/L	Non-detect		UG/L
2941	CHLOROFORM	6.1	UG/L		80	UG/L
2210	CHLOROMETHANE (METHYLCHLORIDE)	0	UG/L	Non-detect		UG/L
2965	O-CHLOROTOLUENE	0	UG/L	Non-detect		UG/L
2966	P-CHLOROTOLUENE	0	UG/L	Non-detect		UG/L
2944	DIBROMOCHLOROMETHANE	0	UG/L	Non-detect	80	UG/L
2408	DIBROMOMETHANE	0	UG/L	Non-detect		UG/L
2967	M-DICHLOROBENZENE	0	UG/L	Non-detect		UG/L
2968	O-DICHLOROBENZENE	0	UG/L	Non-detect	600	UG/L
2969	P-DICHLOROBENZENE	0	UG/L	Non-detect	75	UG/L
2978	1,1-DICHLOROETHANE	0	UG/L	Non-detect		UG/L
2980	1,2-DICHLOROETHANE	0	UG/L	Non-detect	5	UG/L
2977	1,1-DICHLOROETHYLENE	0	UG/L	Non-detect	7	UG/L
2380	CIS-1,2-DICHLOROETHYLENE	0	UG/L	Non-detect	70	UG/L
2979	TRANS-1,2-DICHLOROETHYLENE	0	UG/L	Non-detect	100	UG/L
2964	DICHLOROMETHANE	0	UG/L	Non-detect	5	UG/L
2983	1,2-DICHLOROPROPANE	0	UG/L	Non-detect	5	UG/L
2412	1,3-DICHLOROPROPANE	0	UG/L	Non-detect		UG/L
2416	2,2-DICHLOROPROPANE	0	UG/L	Non-detect		UG/L
2410	1,1-DICHLOROPROPENE	0	UG/L	Non-detect		UG/L
2413	1,3-DICHLOROPROPENE	0	UG/L	Non-detect		UG/L
2992	ETHYLBENZENE	0	UG/L	Non-detect	700	UG/L
2989	MONOCHLOROBENZENE (CHLOROBE..)	0	UG/L	Non-detect	100	UG/L
2996	STYRENE	0	UG/L	Non-detect	100	UG/L
2986	1,1,1,2-TETRACHLOROETHANE	0	UG/L	Non-detect		UG/L
2988	1,1,2,2-TETRACHLOROETHANE	0	UG/L	Non-detect		UG/L
2987	TETRACHLOROETHYLENE	0	UG/L	Non-detect	5	UG/L

Storet Code	Description	Result	Units	Qualifier	MCL	MCL Unit
2991	TOLUENE	0	UG/L	Non-detect	1000	UG/L
2378	1,2,4-TRICHLOROBENZENE	0	UG/L	Non-detect	70	UG/L
2981	1,1,1-TRICHLOROETHANE	0	UG/L	Non-detect	200	UG/L
2985	1,1,2-TRICHLOROETHANE	0	UG/L	Non-detect	5	UG/L
2984	TRICHLOROETHYLENE	0	UG/L	Non-detect	5	UG/L
2414	1,2,3-TRICHLOROPROPANE	0	UG/L	Non-detect		UG/L
2976	VINYL CHLORIDE	0	UG/L	Non-detect	0.2	UG/L
2955	XYLENES, TOTAL	0	UG/L	Non-detect	10000	UG/L

Showing 1 to 41 of 41 entries

Previous 1 Next

Column visibility | Copy to Clipboard | Download to Excel/CSV

Wisconsin Department of Natural Resources

Public Drinking Water System Data

Volatile Organics Sample 9/26/2019 WAUSAU WATERWORKS (73701023)

Sample Group	Volatile Organics	**Sample ID**	1151345
Source ID	300	**Well #**	
Sample Date	9/26/2019	**Sample Time**	1136
Site ID	300	**Sample Description**	
Sample Type	Compliance	**Reported Date**	10/24/2019
Sample Source	Entry Point	**# Taken**	1
Sample Collector	D JENSEN		
Lab ID	721026460	**Lab Name**	Northern Lake Service Inc. (Crandon)
Reason for No Results		**Lab Comment**	

Sampling Results

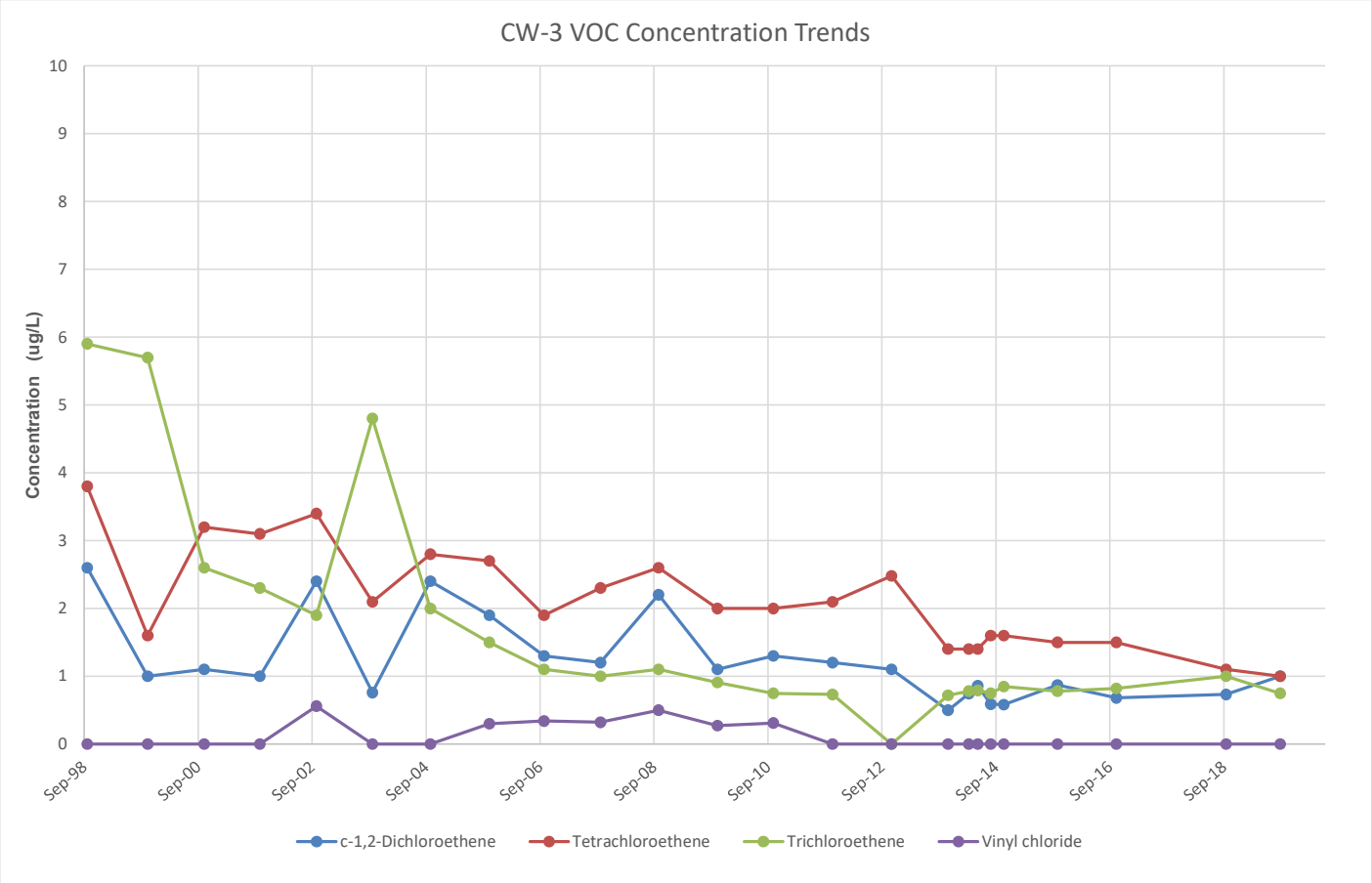
Show 10 entries Filter:

Storet Code	Description	Result	Units	Qualifier	MCL	MCL Unit
2990	BENZENE	0	UG/L	Non-detect	5	UG/L
2993	BROMOBENZENE	0	UG/L	Non-detect		UG/L
2943	BROMODICHLOROMETHANE	0.41	UG/L	Between LOD and LOQ	80	UG/L
2942	BROMOFORM	0	UG/L	Non-detect	80	UG/L
2214	BROMOMETHANE	0	UG/L	Non-detect		UG/L
2982	CARBON TETRACHLORIDE	0	UG/L	Non-detect	5	UG/L
2216	CHLOROETHANE	0	UG/L	Non-detect		UG/L
2941	CHLOROFORM	7	UG/L		80	UG/L
2210	CHLOROMETHANE (METHYLCHLORIDE)	0	UG/L	Non-detect		UG/L
2965	O-CHLOROTOLUENE	0	UG/L	Non-detect		UG/L

Showing 1 to 10 of 41 entries

Previous 1 2 3 4 5 Next

Column visibility Copy to Clipboard Download to Excel/CSV



CITY WATER SUPPLY WELL CW-3 VOC CONCENTRATION TREND

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Appendix I

SVE Closeout Letters

3978

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

SR-6J

April 2, 1996

Mr. Miles Philips
Conestoga-Rovers and Associates
1801 Old Highway 8, Suite 114
St. Paul, Minnesota 55112

Dear Mr. Philips

The United States Environmental Protection Agency (U.S. EPA) has reviewed the Final SVE System Performance Evaluation Report/Mid Point of Operations for the Wausau Water Supply NPL Site which was submitted on February 14, 1996. The report adequately addresses all comments made on the draft report, and is therefore approved as final.

If you have any questions, please call me at (312)-886-0394.

Sincerely,

Jennifer L. Wendel
Remedial Project Manager

cc: Lawrence Lester, WDNR
Joseph Gehin, City of Wausau
James Cherwinka, Wausau Chemical
David Eisenreich, Marathon Electric

SVE SYSTEM PERFORMANCE EVALUATION REPORT MID POINT OF OPERATIONS

Wausau Water Supply NPL Site
Wausau, Wisconsin

FEBRUARY 1996
REF. NO. 3978-00 (15)
This report printed on recycled paper

CONESTOGA-ROVERS & ASSOCIATES

5.0 WEST BANK SUMMARY, COMPLETION NOTIFICATION AND REQUEST FOR CLOSURE OF THE WEST BANK SVE SYSTEM

Based on the criteria specified in the CD and the monitoring plan, the Wausau PRP Group hereby presents notice of completion and formal request for approval for shut down and closure of the West Bank SVE system. Data evaluations and summaries documenting that closure criteria have been met are presented below.

5.1 SOIL SAMPLING SUMMARY

5.1.1 Summary of the West Bank Pre-Startup Soil Sampling

The results of the pre start-up soil sampling conducted in 1993 are presented in Table 5.1. The statistical summary of this data is presented in Table 5.2. Figure 5.7 presents the 1993 soil sample locations. The soil samples were analyzed for the list of Site VOCs in use during December 1993. The data indicates TCE as the primary contaminant at the Site. The data also indicates acetone in high concentrations. The acetone detections were attributed to sample collection and analysis contamination after results of soil gas samples collected at the start up of the system did not detect any acetone.

5.1.2 Summary of the West Bank Mid-Point Soil Sampling

The results of the mid-point soil sampling conducted in 1995 are presented in Table 5.3. The statistical summary of this data is presented in Table 5.4. Figure 5.8 presents the 1995 soil sample locations.

The soil samples were analyzed for the current list of Site VOCs. This list is shorter than the Site VOC list used for the pre start-up sampling as the list was reduced by eight VOCs as part of the approved monitoring program changes in 1994. The approved modifications to the Site VOC list were due to repeated non detects for those VOCs in the groundwater. Any VOC not on the current Site VOC list is not a contaminant of concern and

adding two new active SVE wells to the SVE system and shutting down SVE wells 1 and 3. The new wells would be placed within the Wausau Chemical Building to improve VOC removal from beneath the building.

7.3 RECOMMENDATIONS FOR OPERATIONS OF THE WEST BANK SVE SYSTEM

The cleanup objectives at the West Bank have been achieved and with closure approval, operation and monitoring of the system will cease. Marathon Electric and the City of Wausau propose to postpone dismantling of the SVE system until the East Bank SVE system is dismantled. There are potential cost savings for combining this work. This would also allow for the voluntary operation of the West Bank system beyond the requirements of the Consent Decree.

3978-20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

September 26, 2007

Jason Twaddle
Conestoga-Rovers
1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112

RE: Wausau Groundwater Superfund Site

Dear Mr. Twaddle:

This letter is to inform you that U.S. EPA and WDNR approve the closure of the East Bank Soil Vapor Extraction (SVE) system on the Wausau Chemical property, in response to your August 29, 2007 memo to Eileen Kramer and myself, which included the requested Deed Restriction for Wausau Chemical recorded 4/26/07 by Marathon County, Wisconsin. The East Bank SVE system operated from 1994 to 2001. Subsequent soil sampling in 2001 and local quarterly groundwater monitoring completed in 2003 provided confirmation to the shut down of the East Bank SVE system in 2001.

As a result, all the requirements for the SVE soil source remediation at the Wausau Groundwater Superfund Site have been completed, as approval for the closure of a second West Bank SVE system on the Marathon Electric property took place in April 1996. In addition, though, a documented property restriction is needed for the former Wausau City Landfill on the Marathon Electric property. The West Bank SVE system operated between 1994 and 1996.

Future remediation activities at the Wausau Groundwater Site will now focus on the operation, maintenance and monitoring of the groundwater remedy at the Site.

Sincerely,

Jeff Gore, RPM

cc: Eileen Kramer, WDNR

Appendix J

O&M Cost Estimates

Appendix J

O&M Cost Estimates

The costs for the City of Wausau for O&M of the air strippers at the water treatment plant range from about $38,000 to $42,000 per year or approximately $198,500 for the 2015 through 2019 five-year period. The costs for GHD, the environmental contractor, to assist in the other cleanup efforts are approximately $45,000 to $50,000 per year for O&M at the Wausau Water Supply Site (about $245,000 for the 2015 through 2019 five-year period). This includes annual groundwater monitoring (including lab costs), annual reporting, monitoring well maintenance and site inspections. It does not include work conducted for the vapor intrusion evaluation or the EW1 Shutdown Pilot Study.

Appendix K

Figures

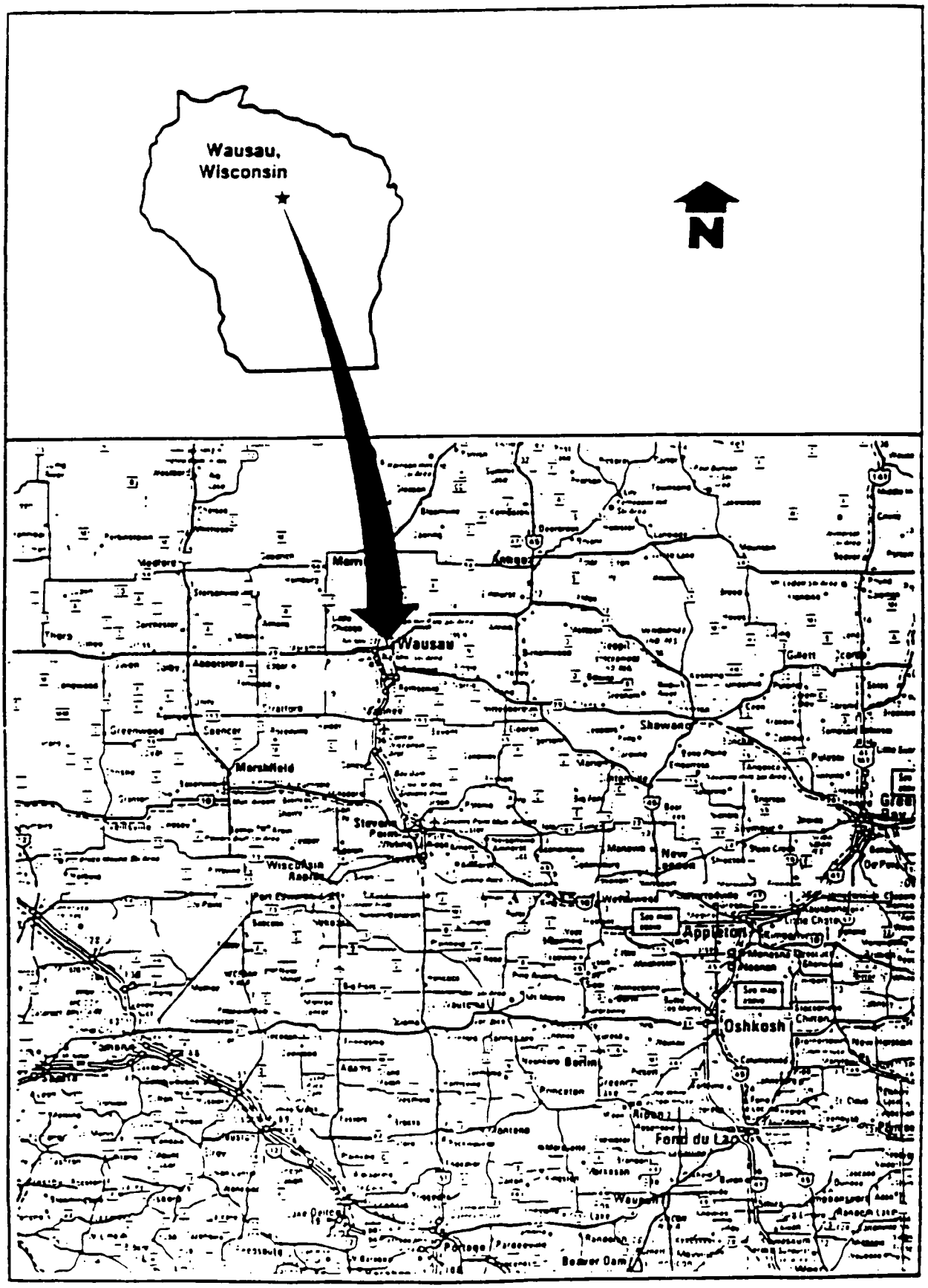
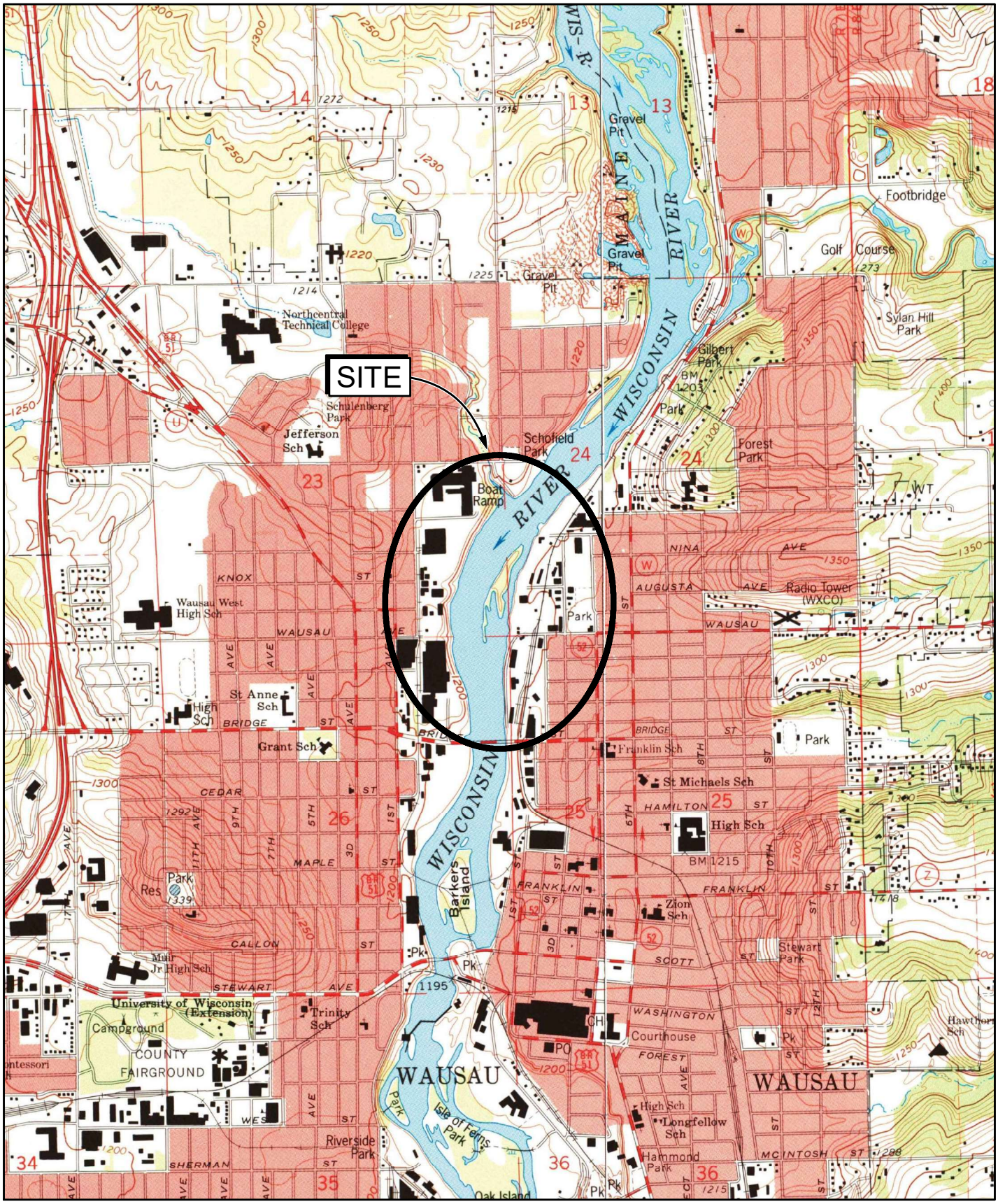


FIGURE 1 REGIONAL LOCATION MAP



Source: USGS 7.5 Minute Quads - Wausau East; Wausau West

0 1,000 2,000 ft

N

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

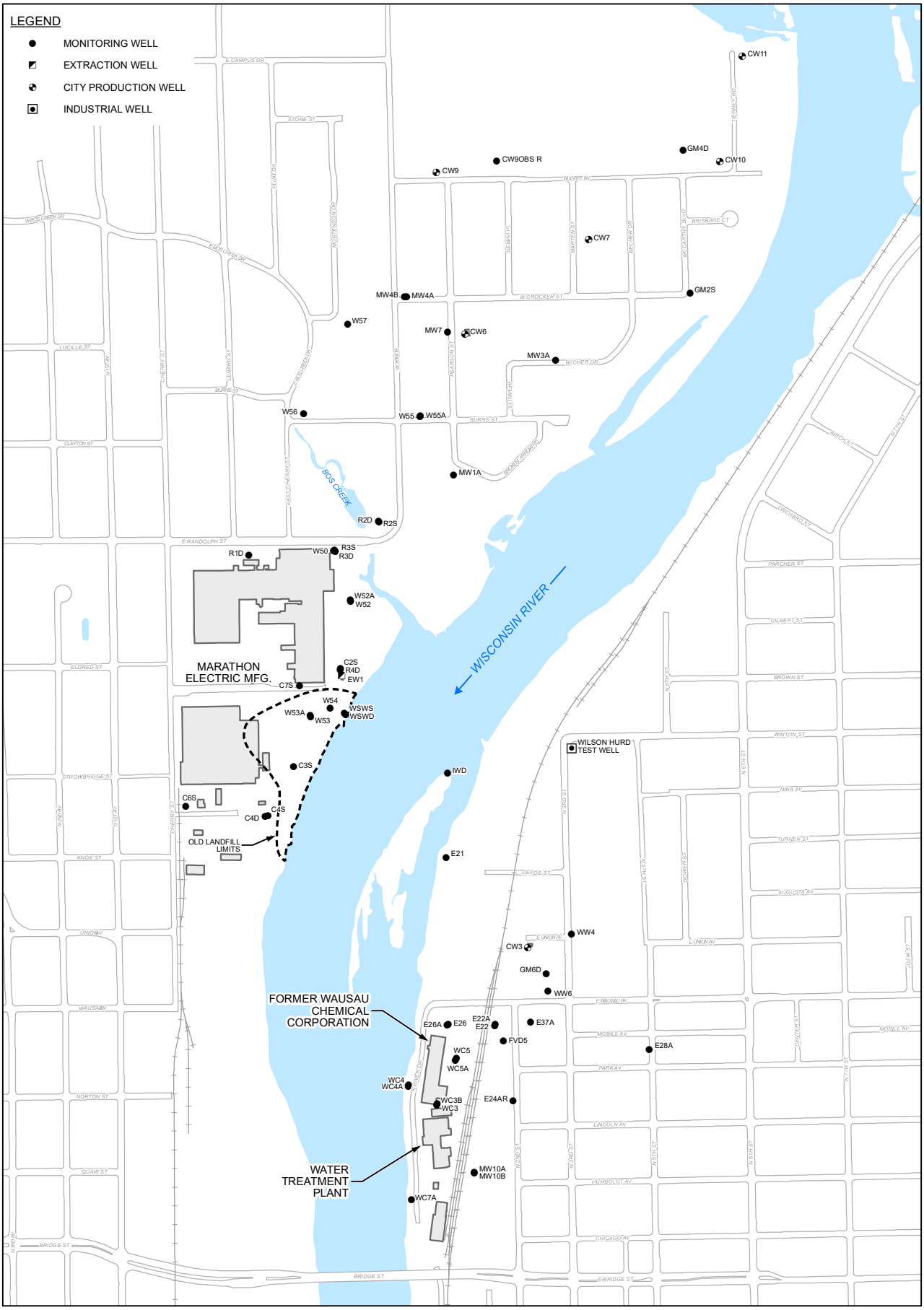
003978-00

Jan 2, 2020

SITE LOCATION

FIGURE 1.1

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP001.mxd



Source: Marathon County

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

003978-00
Jan 3, 2020

SITE PLAN

FIGURE 1.2

GIS File: I:\GIS\Projects\6-chars\00-----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP002.mxd

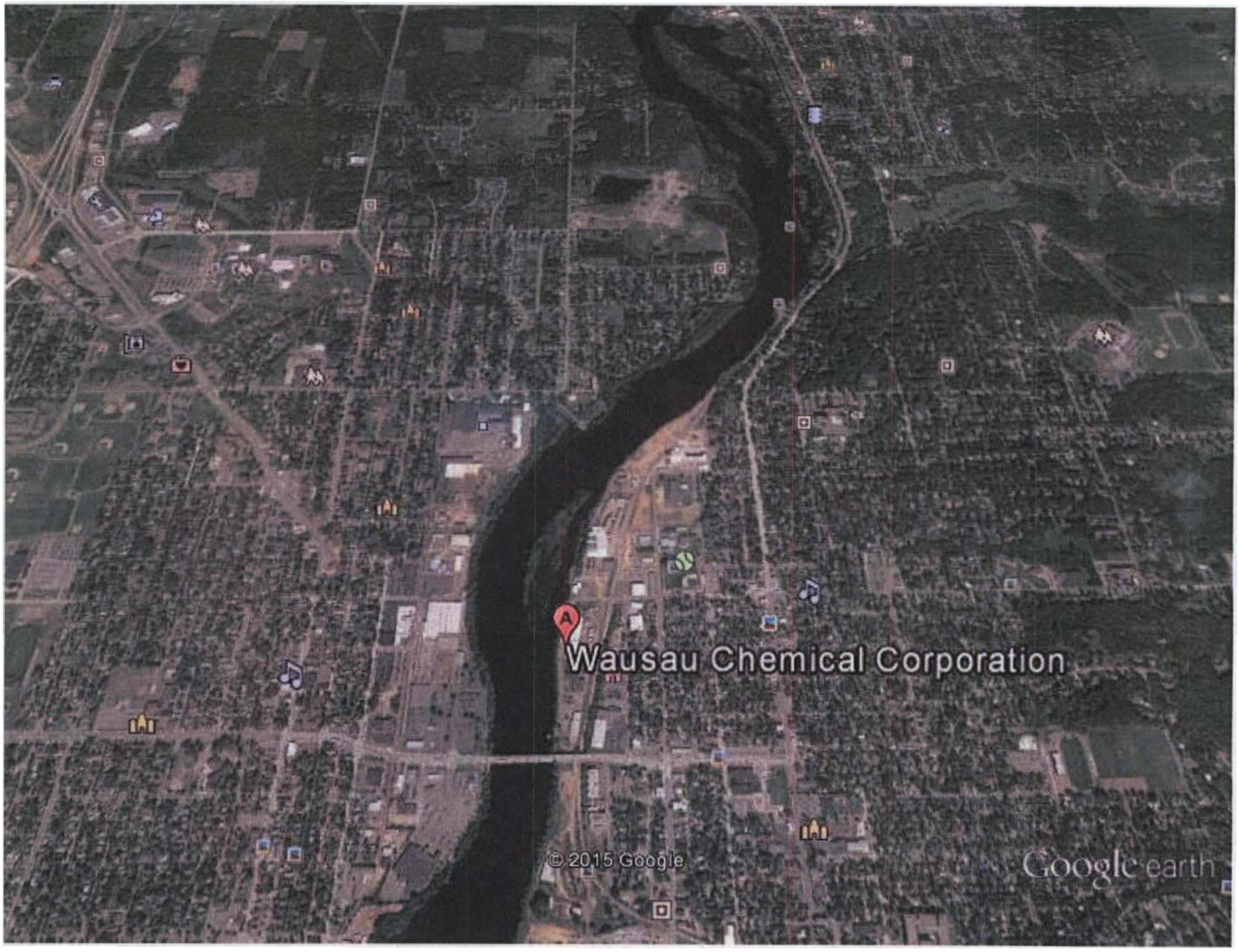


Figure 1.3
Aerial Photograph
(Circa. 2015)

Figures 2 (2013-2019) Groundwater Contours

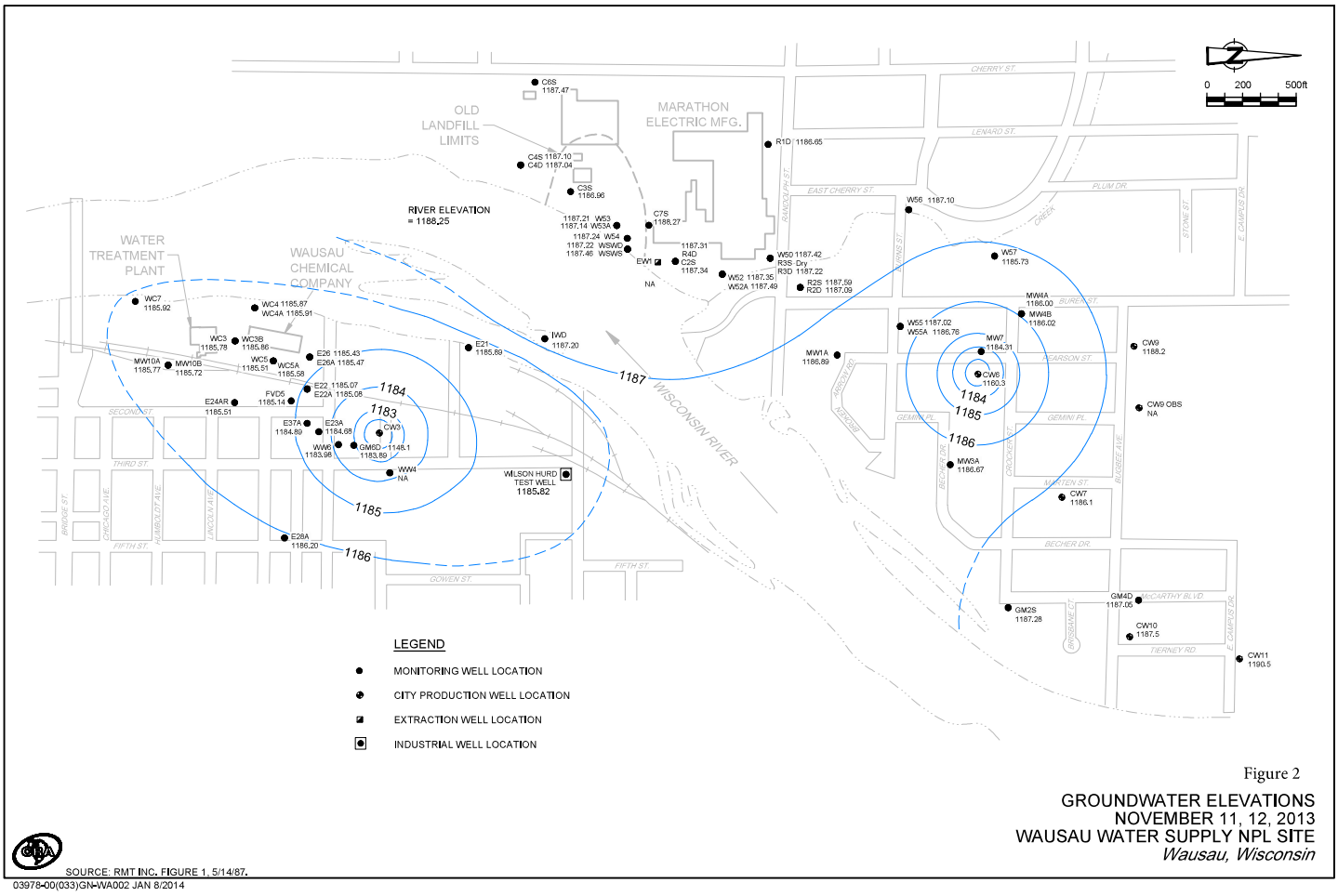


Figure 2

GROUNDWATER ELEVATIONS
NOVEMBER 11, 12, 2013
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

SOURCE: RMT INC. FIGURE 1, 5/14/87.

03978-00(033)GN-WA002 JAN 8/2014

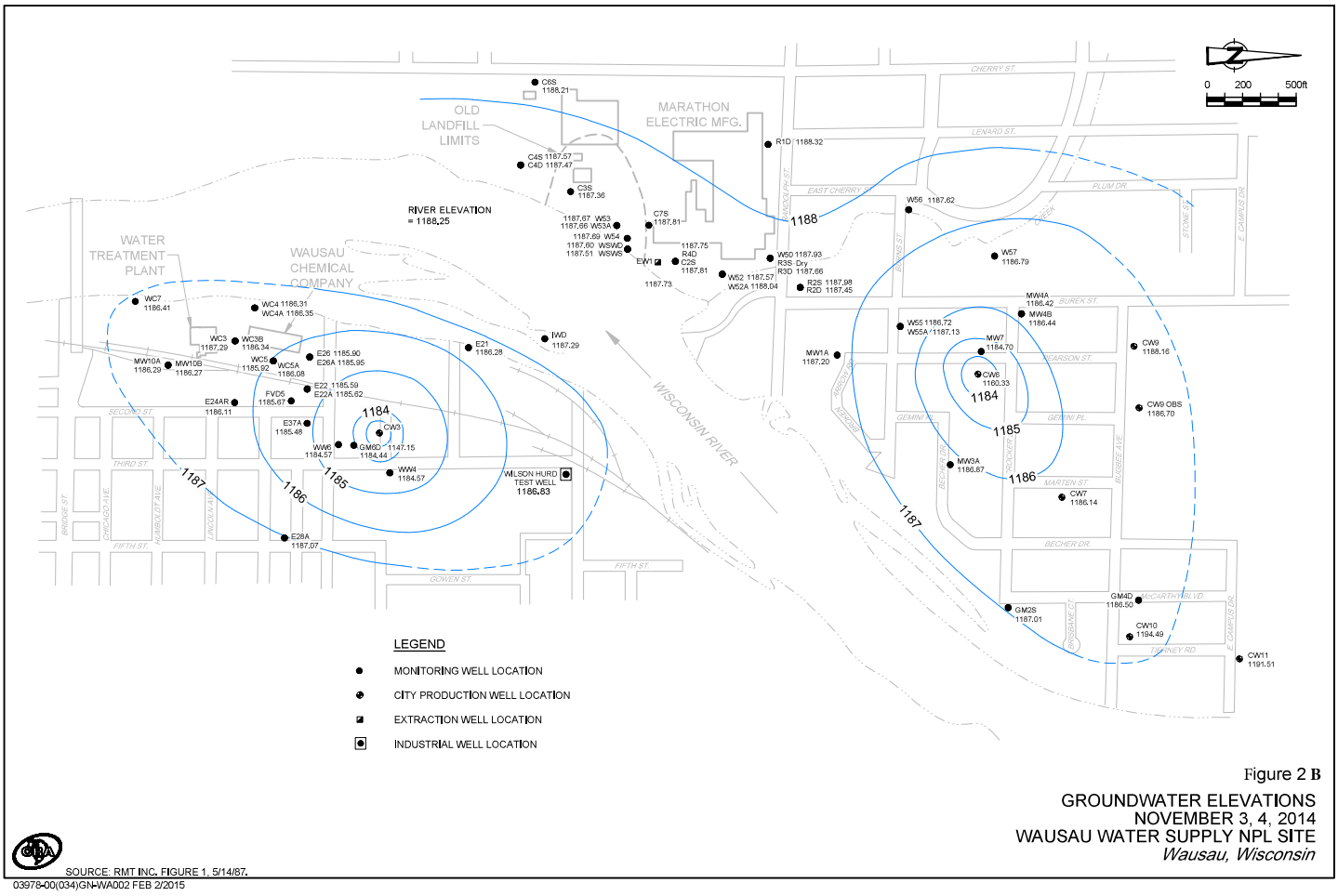


Figure 2 B

GROUNDWATER ELEVATIONS
NOVEMBER 3, 4, 2014
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

SOURCE: RMT INC. FIGURE 1, 5/14/87.

03978-00(034)GN-WA002 FEB 2/2015

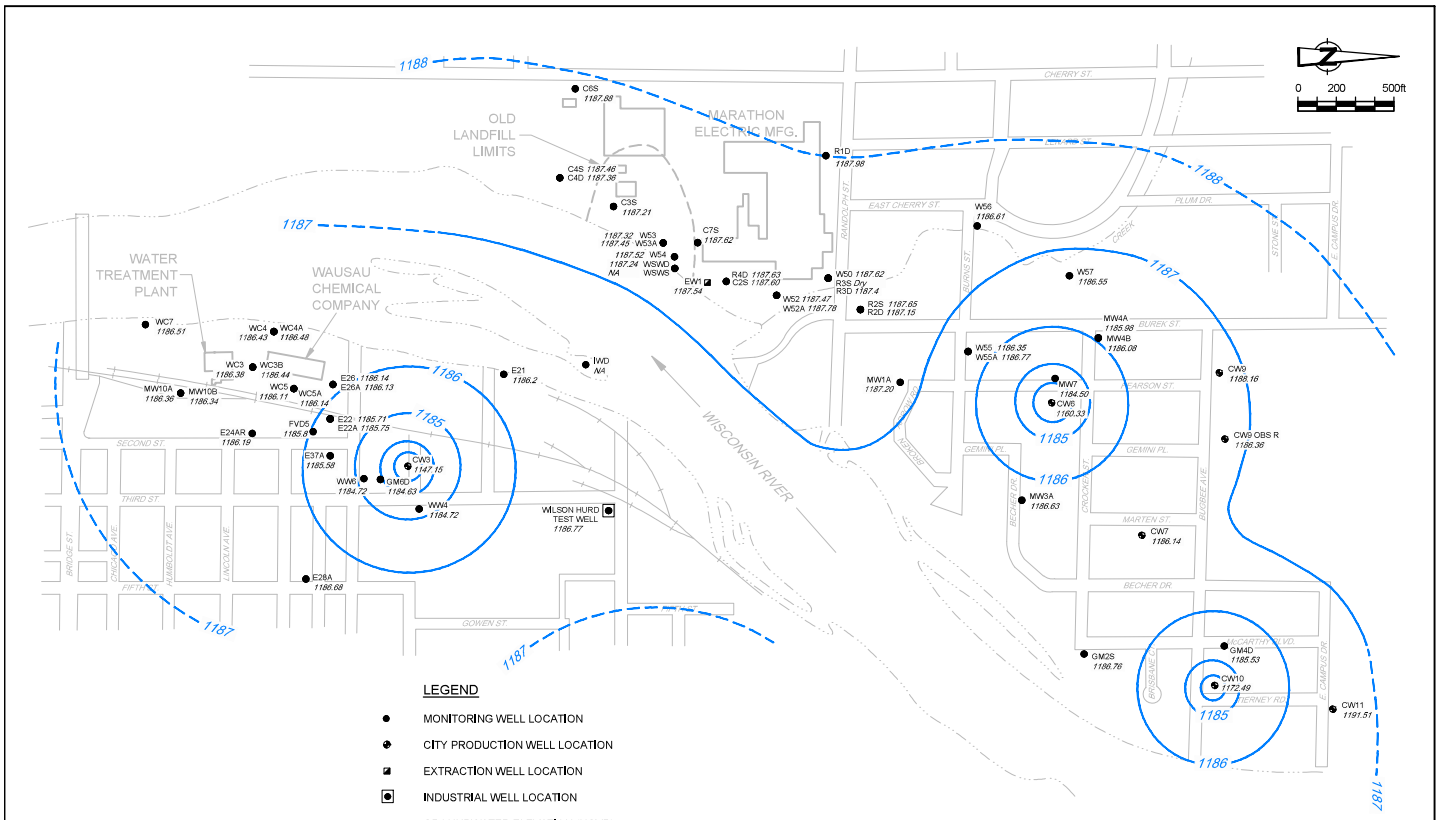
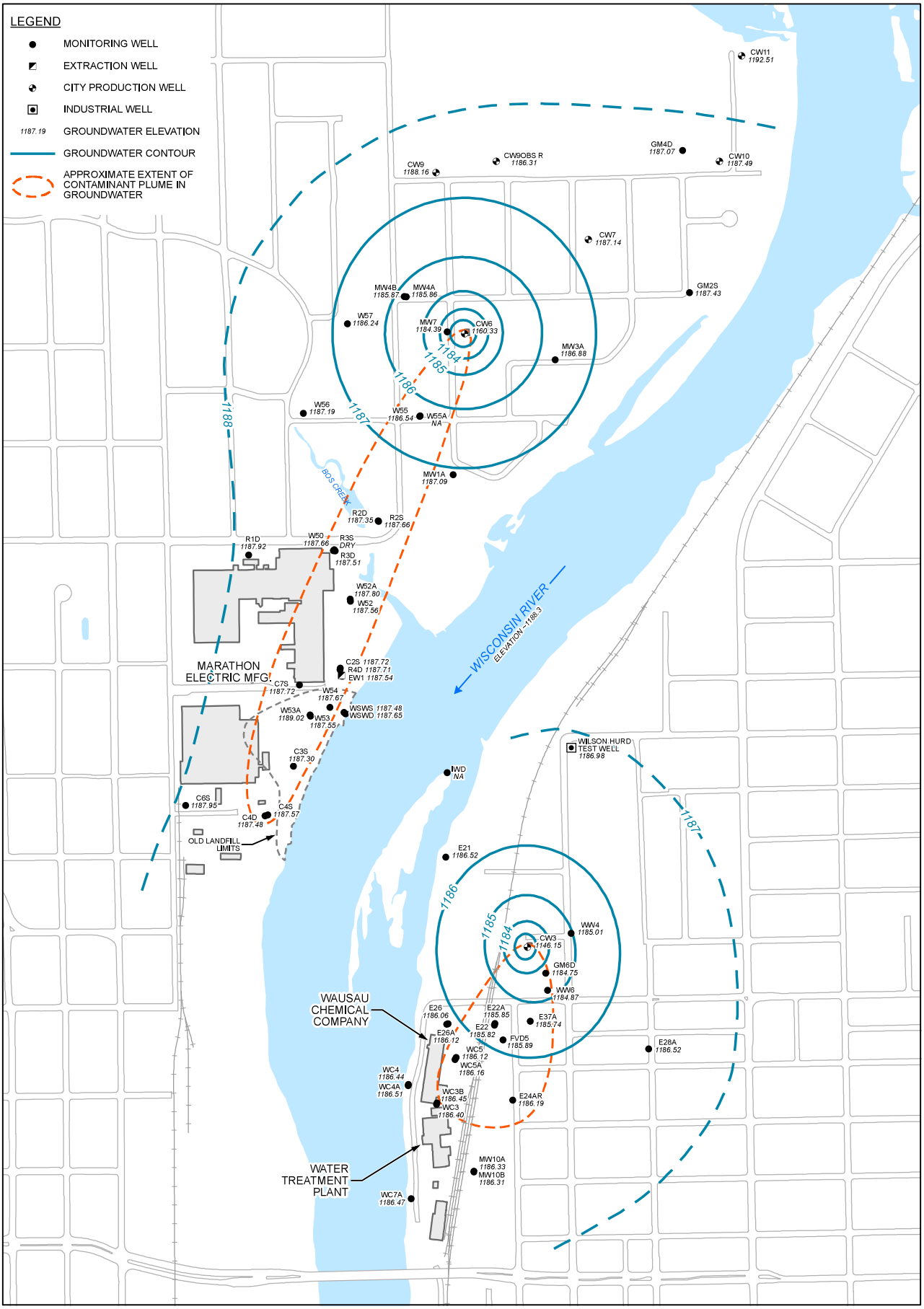


Figure 2 C

GROUNDWATER ELEVATIONS OCTOBER 12 & 13, 2015
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

SOURCE: RMT INC. FIGURE 1, 5/14/87.

03978-00(035)GN-WA002 FEB 4, 2016



Source: Marathon County

0 500 ft

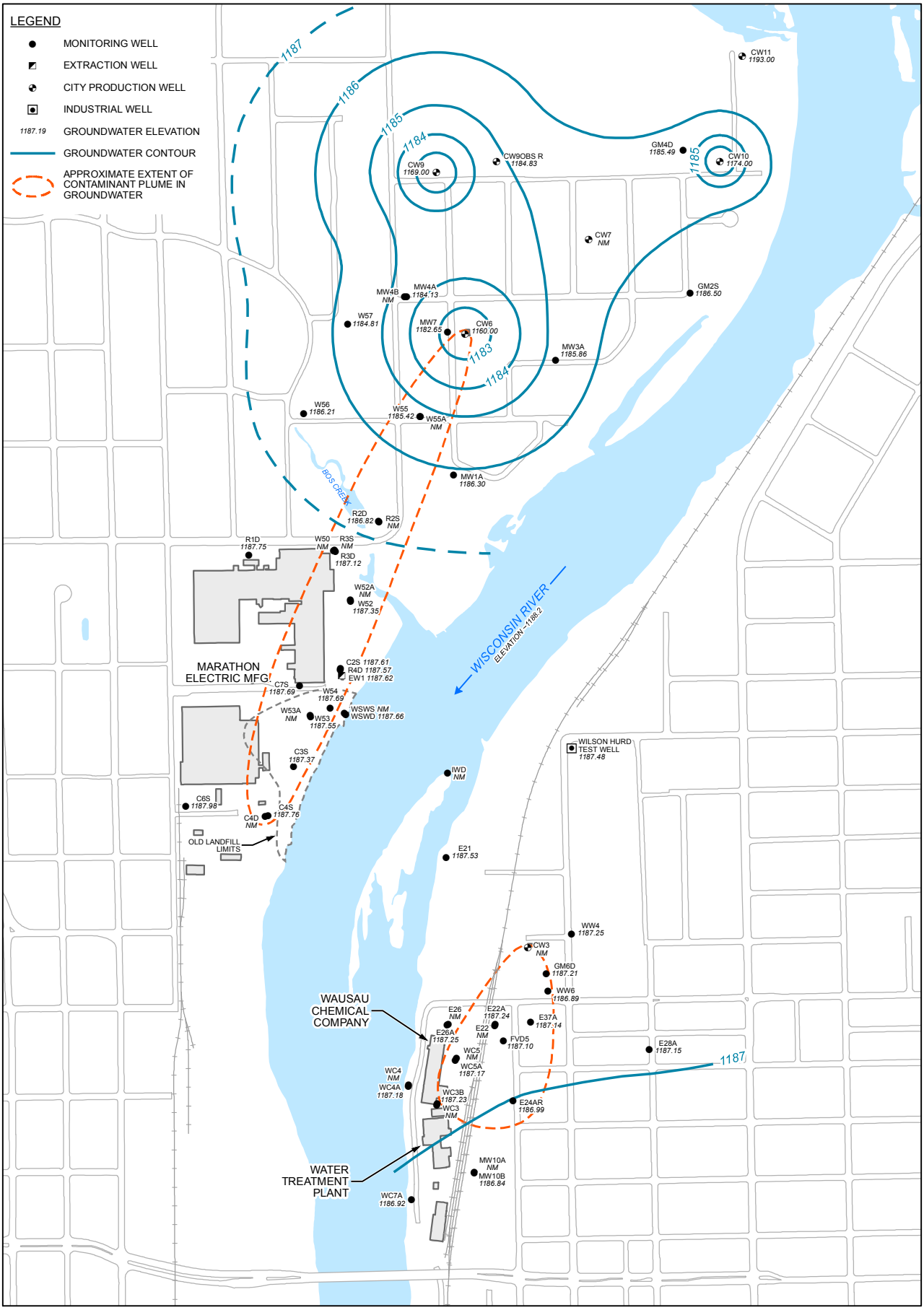
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2016 ANNUAL MONITORING REPORT

003978-00
Mar 20, 2017

GROUNDWATER CONTOURS - OCTOBER 25, 2016

FIGURE 2 D

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(038)\003978-00(038)GIS-SP003.mxd



Source: Marathon County

0 500 ft

N

GHD

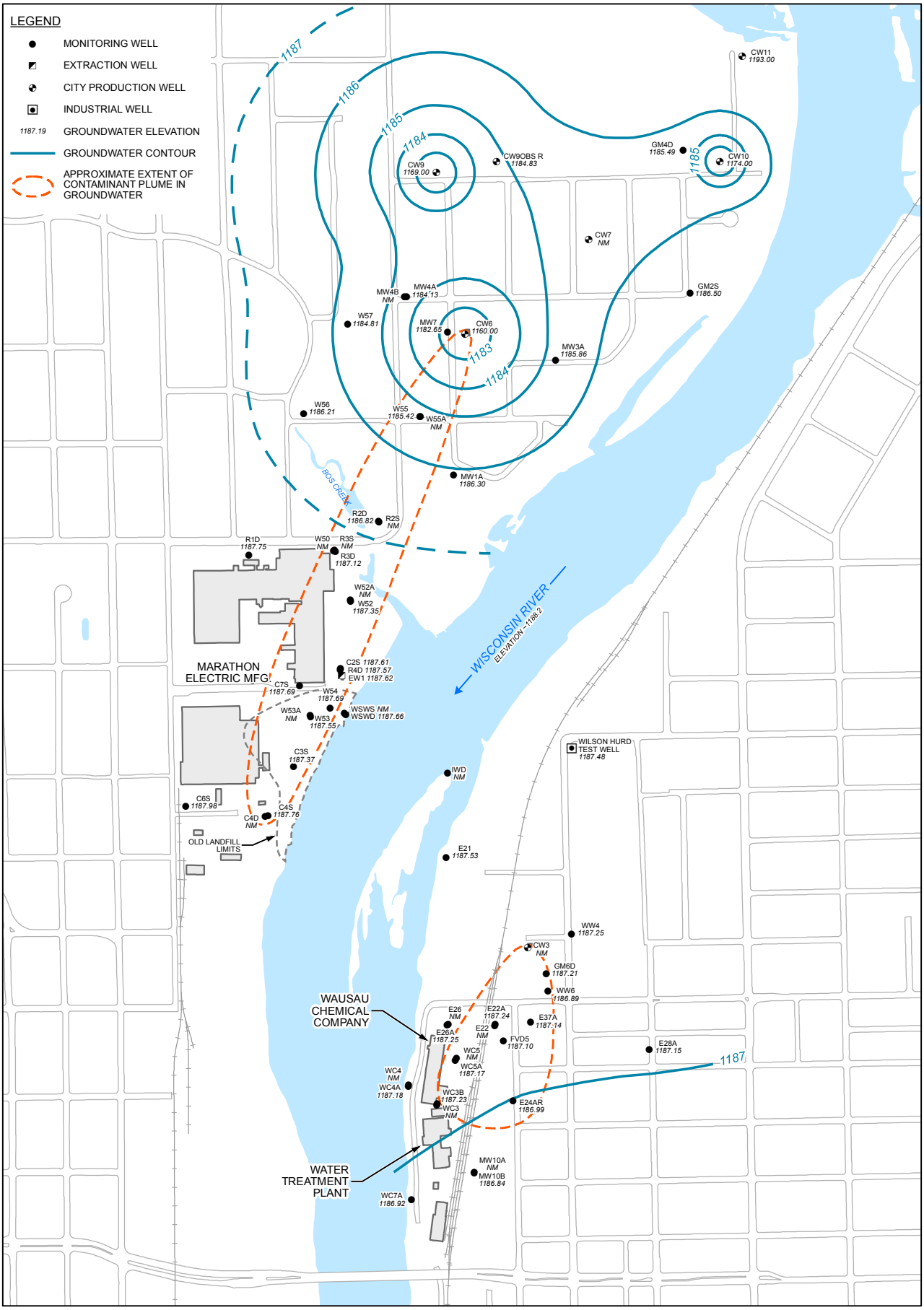
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2017 ANNUAL MONITORING REPORT

003978-00
Jan 26, 2018

GROUNDWATER CONTOURS - OCTOBER 2017

FIGURE 2 E

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(039)\003978-00(039)GIS-SP003.mxd



Source: Marathon County

0 500 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2017 ANNUAL MONITORING REPORT

003978-00
Jan 26, 2018

GROUNDWATER CONTOURS - OCTOBER 2017

FIGURE 2 F

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(039)\003978-00(039)GIS-SP003.mxd

LEGEND

- MONITORING WELL
- EXTRACTION WELL
- CITY PRODUCTION WELL
- INDUSTRIAL WELL
- 1187.19 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR
- APPROXIMATE EXTENT OF CONTAMINANT PLUME IN GROUNDWATER

CW11 ~1188
1182
1181
GM4D 1180.98
CW10 ~1168
CW9 ~1183
CW9OBS R 1181.11
CW7 ~1189
1184
1183
1182
1181
MW4A 1181.27
MW4B NM
GM2S 1182.34
W57 NM
MW7 1179.59
CW6 ~1160
1180
MW3A 1182.08
W56 1181.32
W55 1181.99
W55A NM
MW1A 1182.53
BOS CREEK
R2D 1183.07
R2S NM
R1D 1184.27
W50 NM
R3S NM
R3D 1183.34
W52A NM
W52 1183.37
WISCONSIN RIVER
ELEVATION ~1181.8
MARATHON ELECTRIC MFG.
C2S 1183.50
R4D 1183.41
EW1 1183.46
C7S 1183.45
W54 1183.42
W53A NM
WSWS NM
WSWD 1183.33
W53 1183.53
C3S 1182.77
WILSON HURD TEST WELL 1182.54
IWD NM
C6S 1184.18
C4S 1183.15
C4D NM
OLD LANDFILL LIMITS
E21 1182.12
WW4 1180.61
CW3 ~1143
1180
1182
1183
1181
GM6D 1180.56
WW6 1180.50
FORMER WAUSAU CHEMICAL CORPORATION
E26 NM
E22A 1181.73
E37A 1181.62
E22 NM
E26A 1181.96
FVD5 1181.92
E28A 1183.84
WC5 NM
WC5A 1182.12
WC4 NM
WC4A 1182.43
WC3B 1182.39
WC3 NM
E24AR 1182.32
WATER TREATMENT PLANT
MW10A NM
MW10B 1182.49
WC7A 1182.53

Source: Marathon County

0 500 ft

N

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

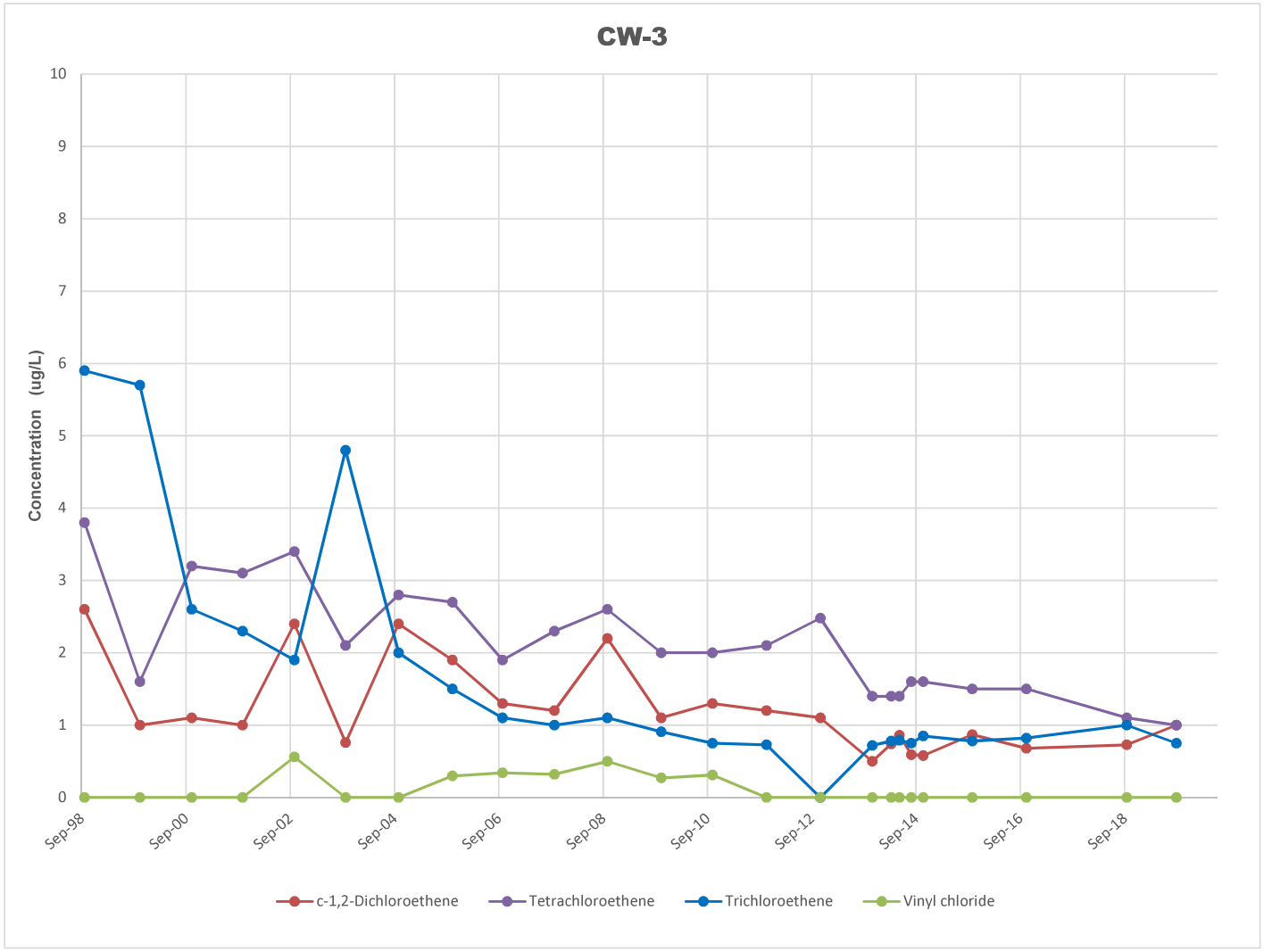
GROUNDWATER ELEVATIONS AND CONTOURS SEPTEMBER 2019

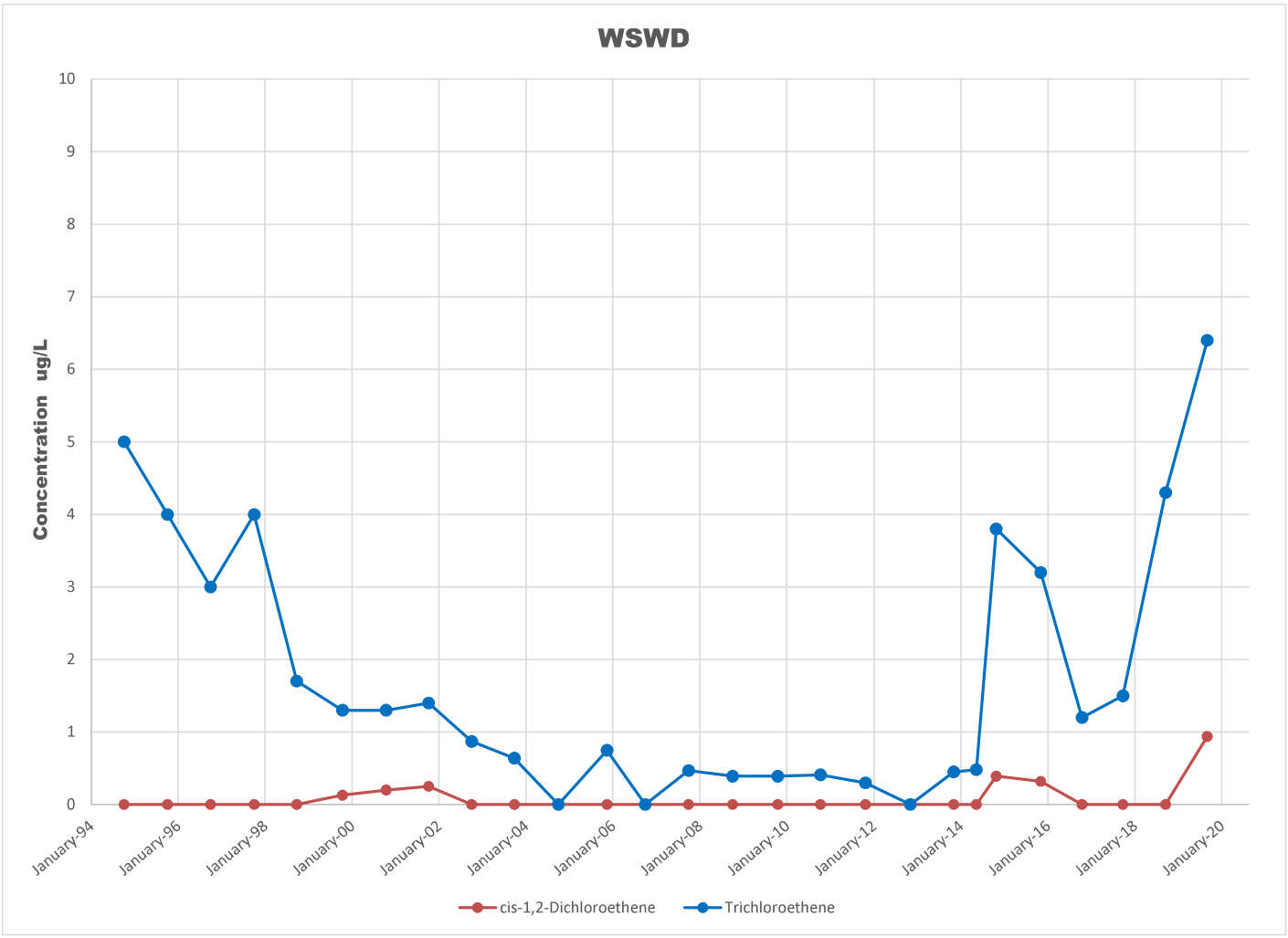
003978-00
Jan 3, 2020

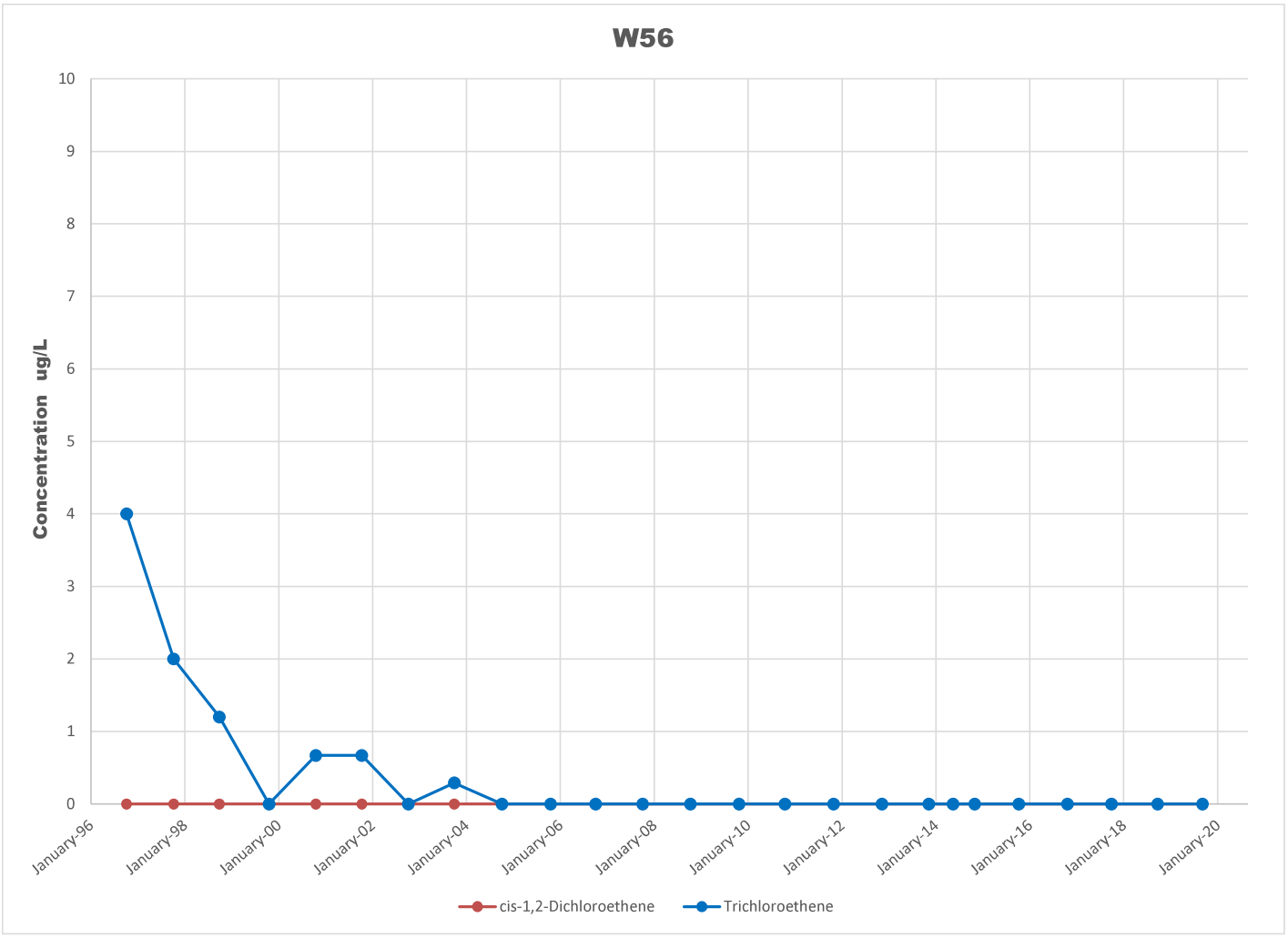
FIGURE 2 G

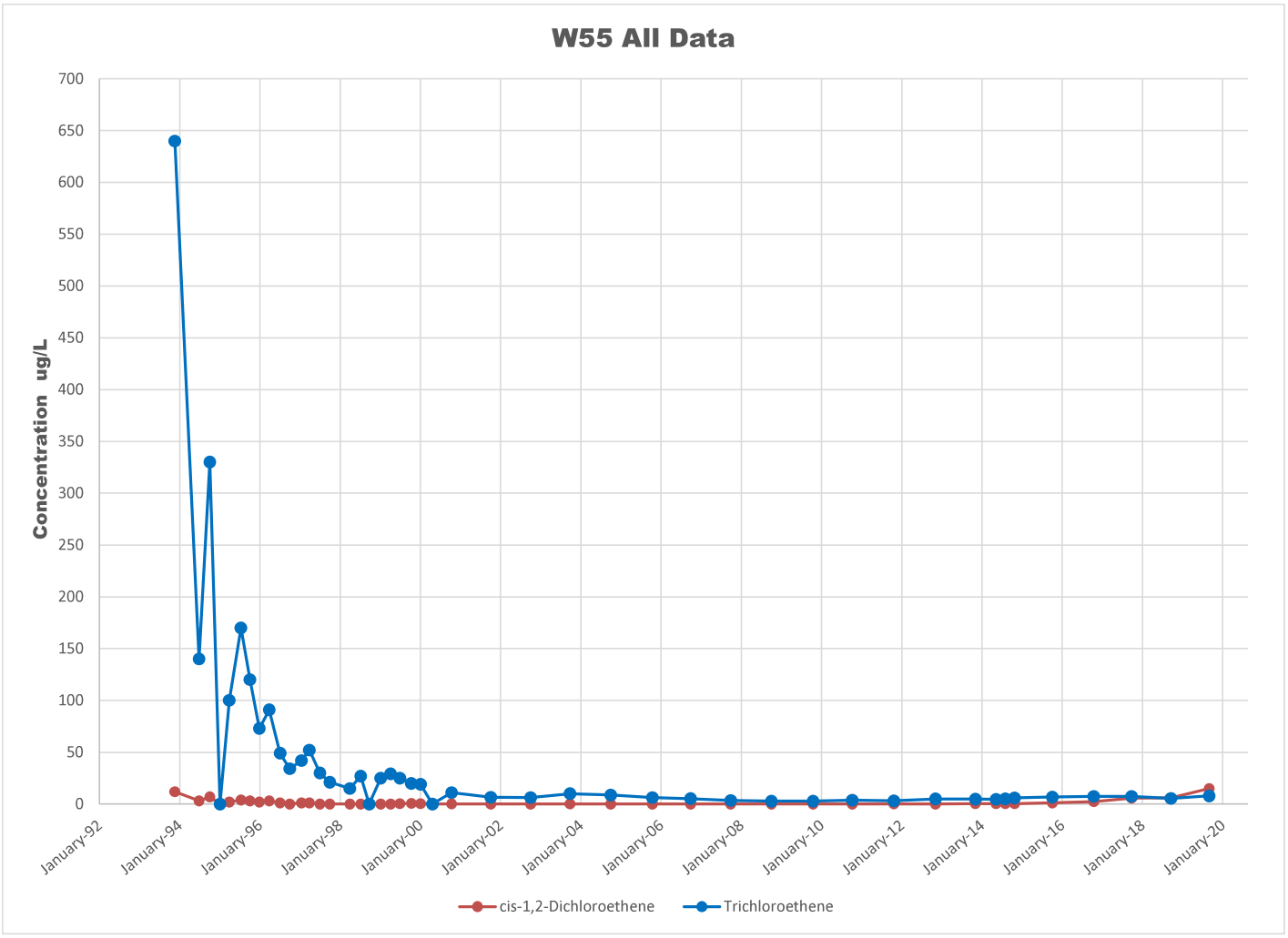
GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP003.mxd

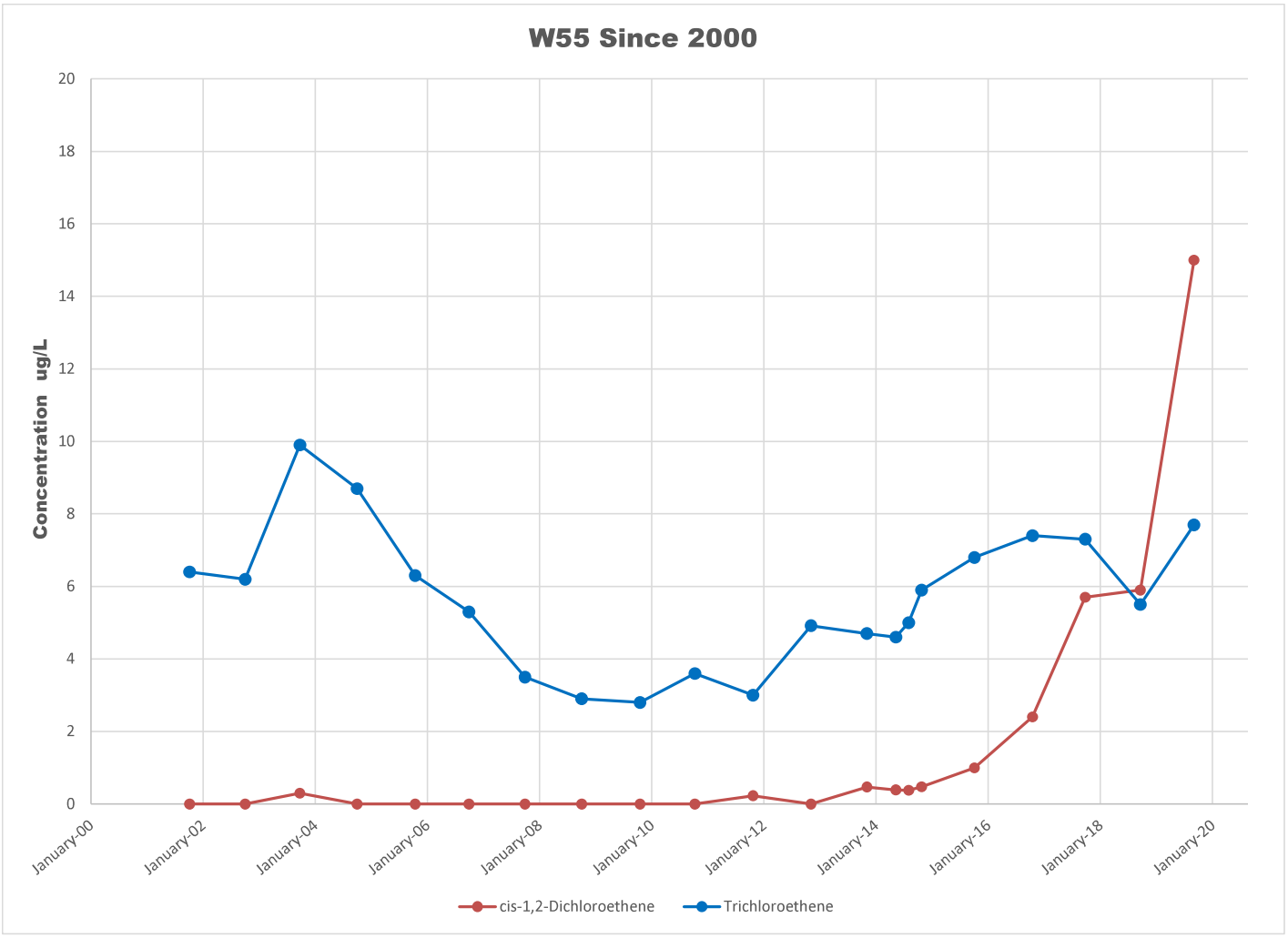
Figures 3(A - S)
Total Chlorinated VOC Concentration Charts

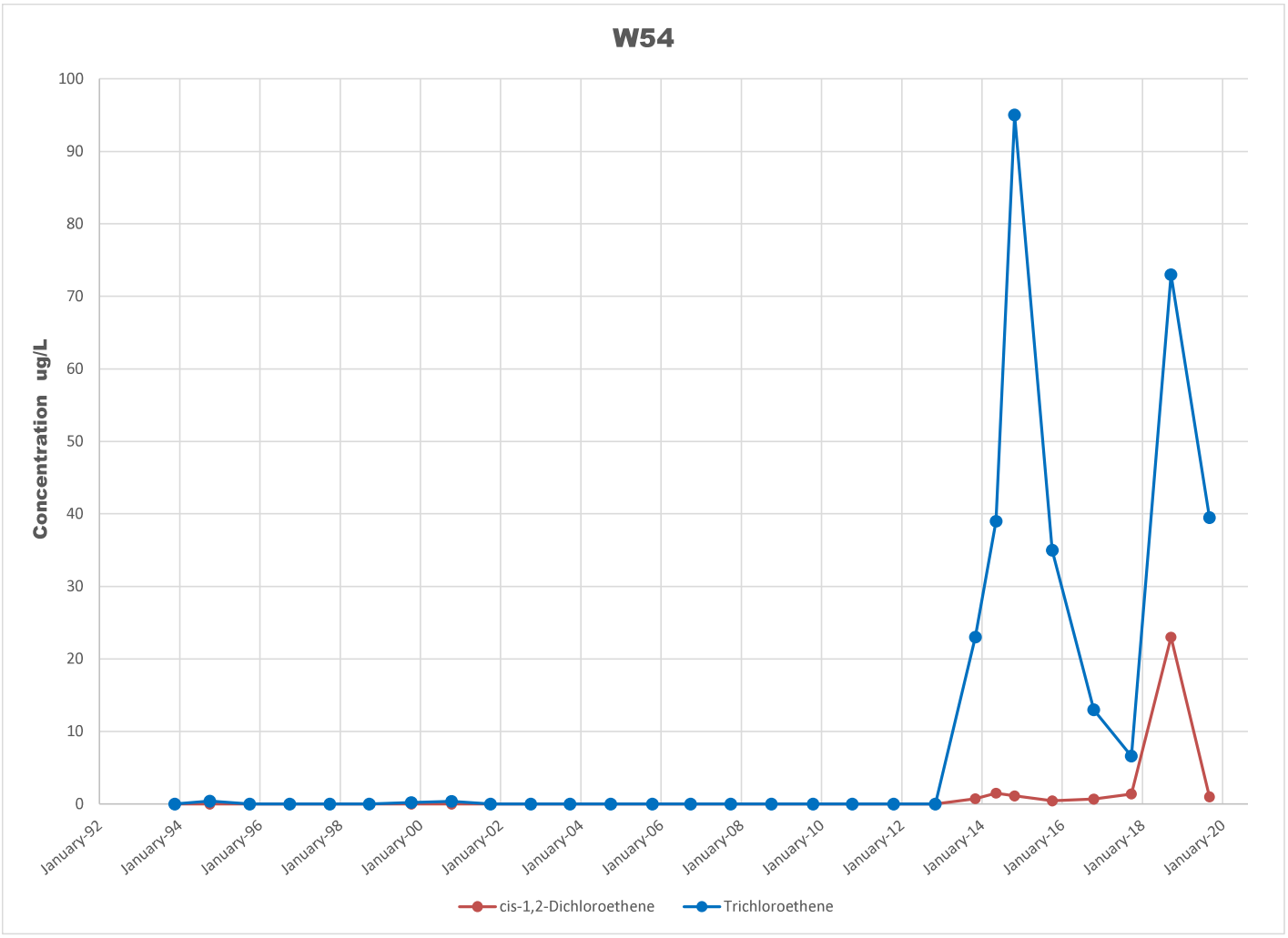

CW-3
Concentration (ug/L)
10
9
8
7
6
5
4
3
2
1
0
Sep-98
Sep-00
Sep-02
Sep-04
Sep-06
Sep-08
Sep-10
Sep-12
Sep-14
Sep-16
Sep-18
c-1,2-Dichloroethene
Tetrachloroethene
Trichloroethene
Vinyl chloride

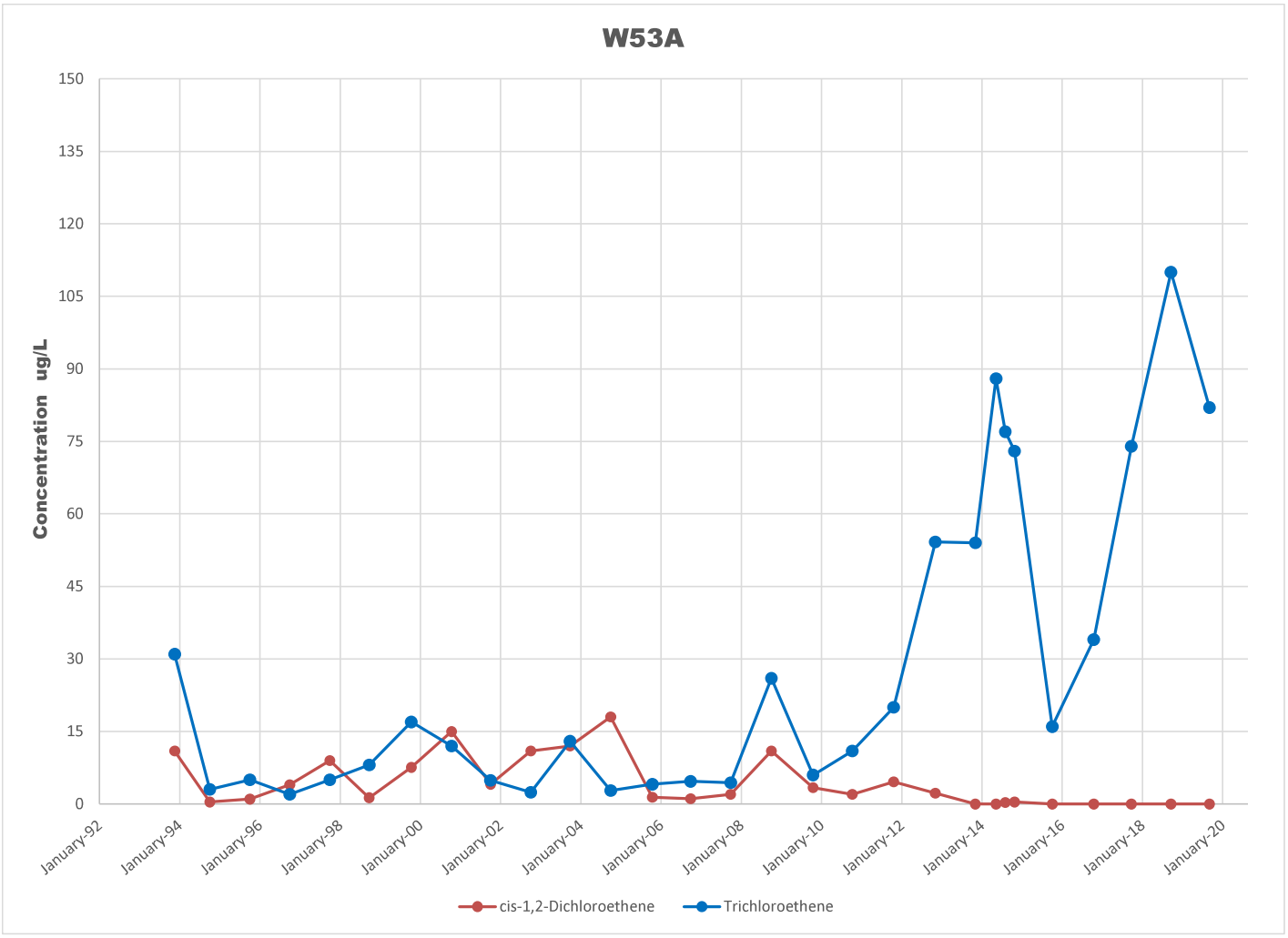

WSWD
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

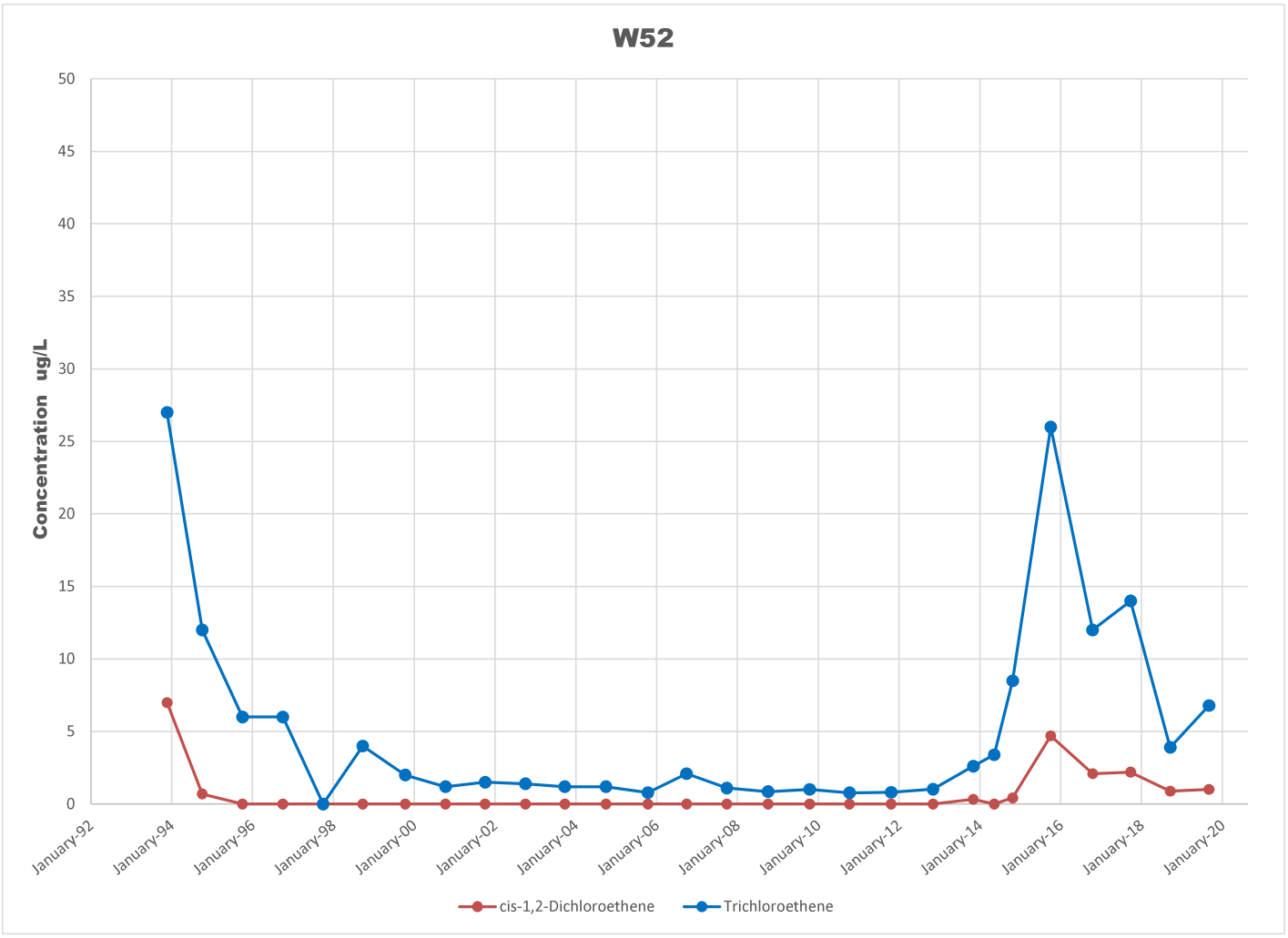

W56
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

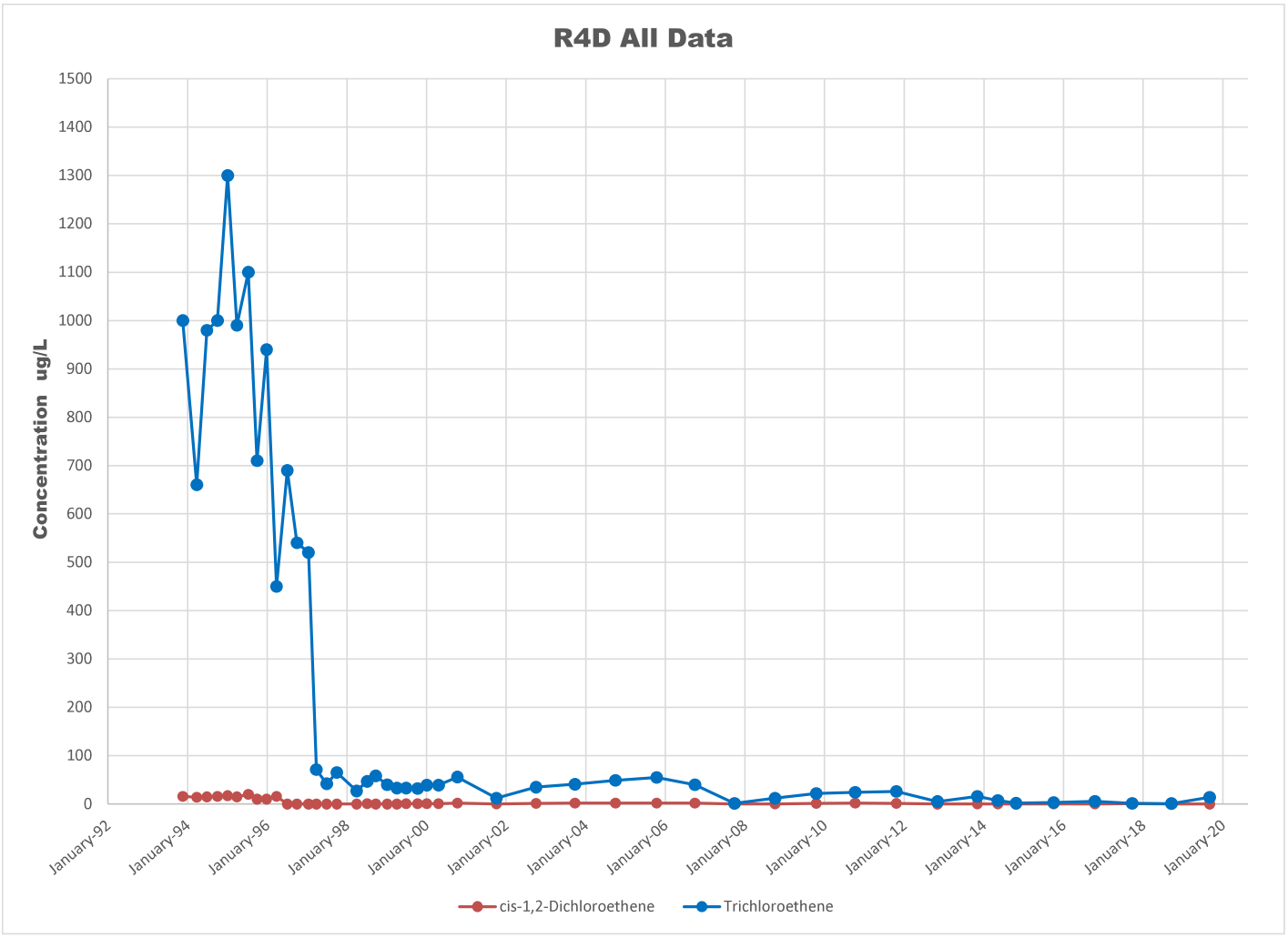

W55 All Data
Concentration ug/L
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

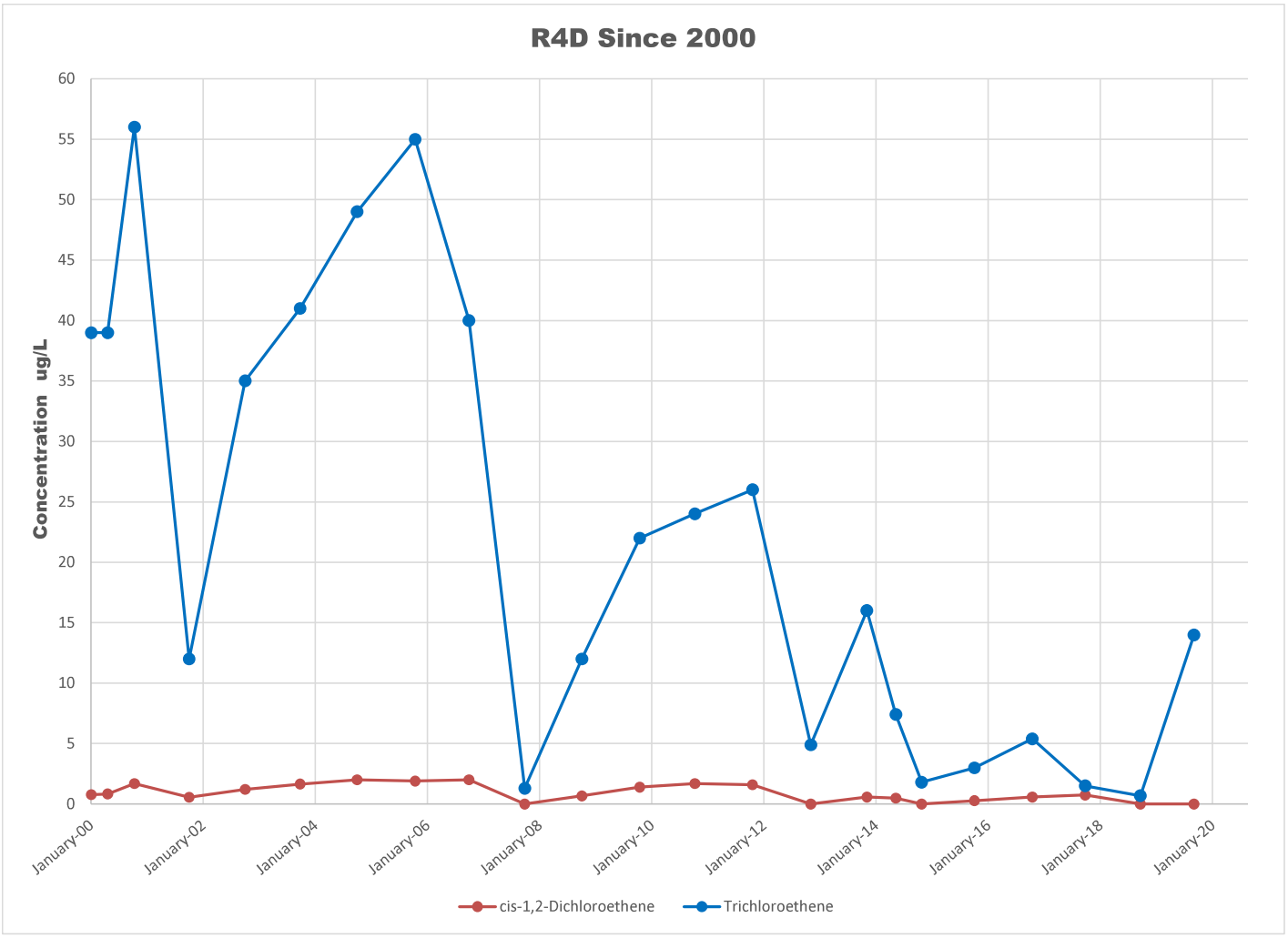

W55 Since 2000
Concentration ug/L
20
18
16
14
12
10
8
6
4
2
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

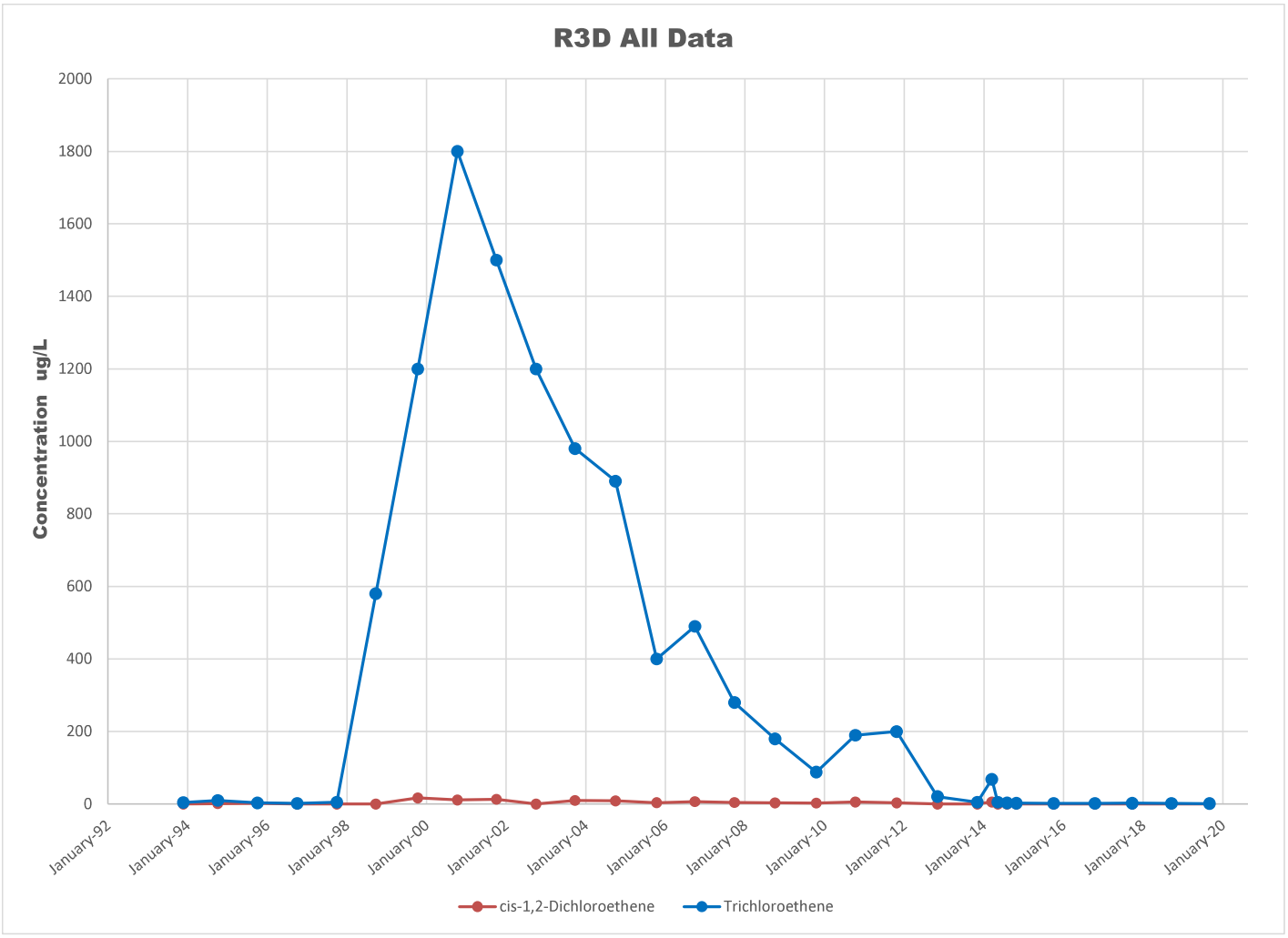

W54
Concentration ug/L
100
90
80
70
60
50
40
30
20
10
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

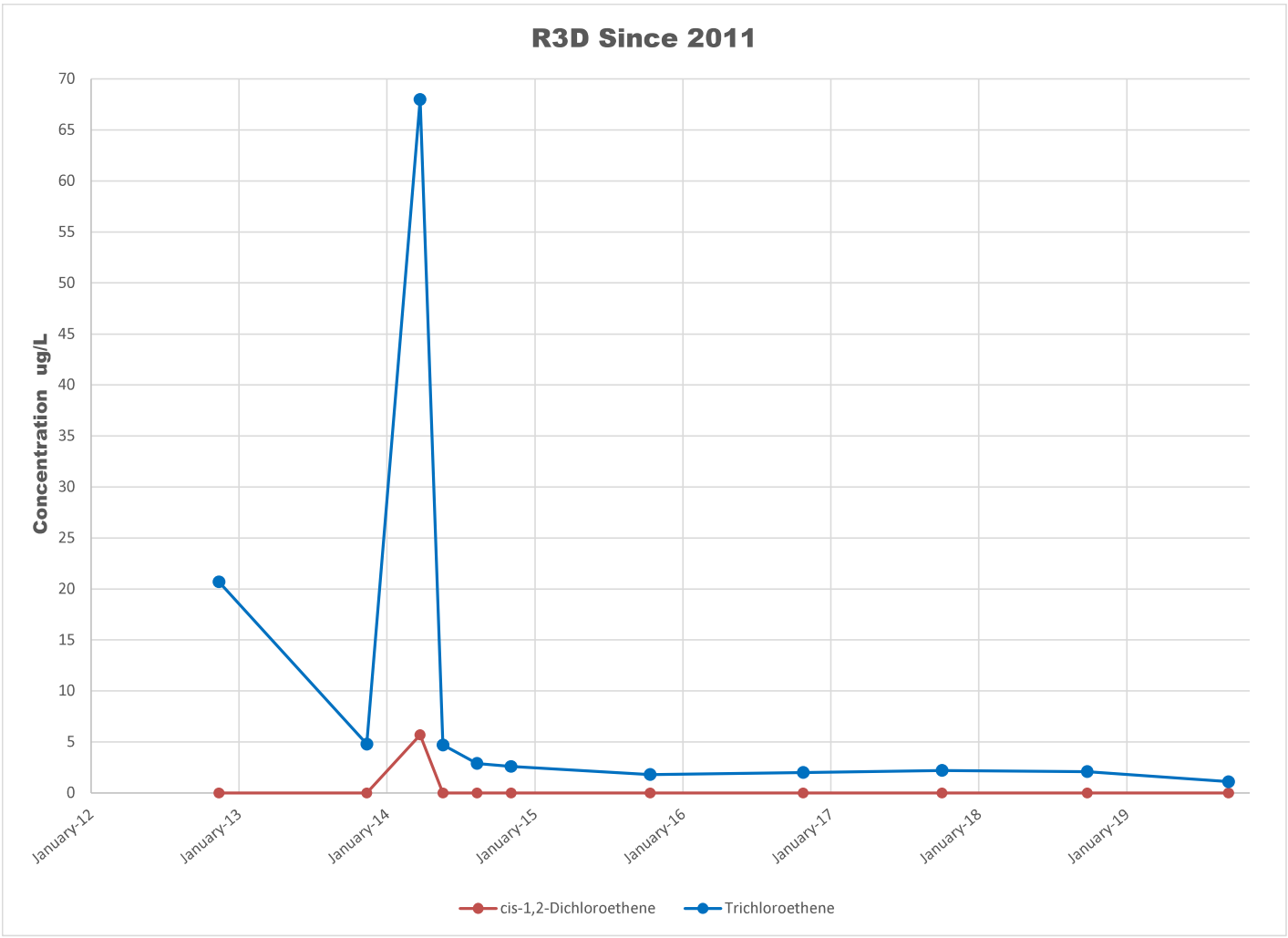

W53A
Concentration ug/L
150
135
120
105
90
75
60
45
30
15
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

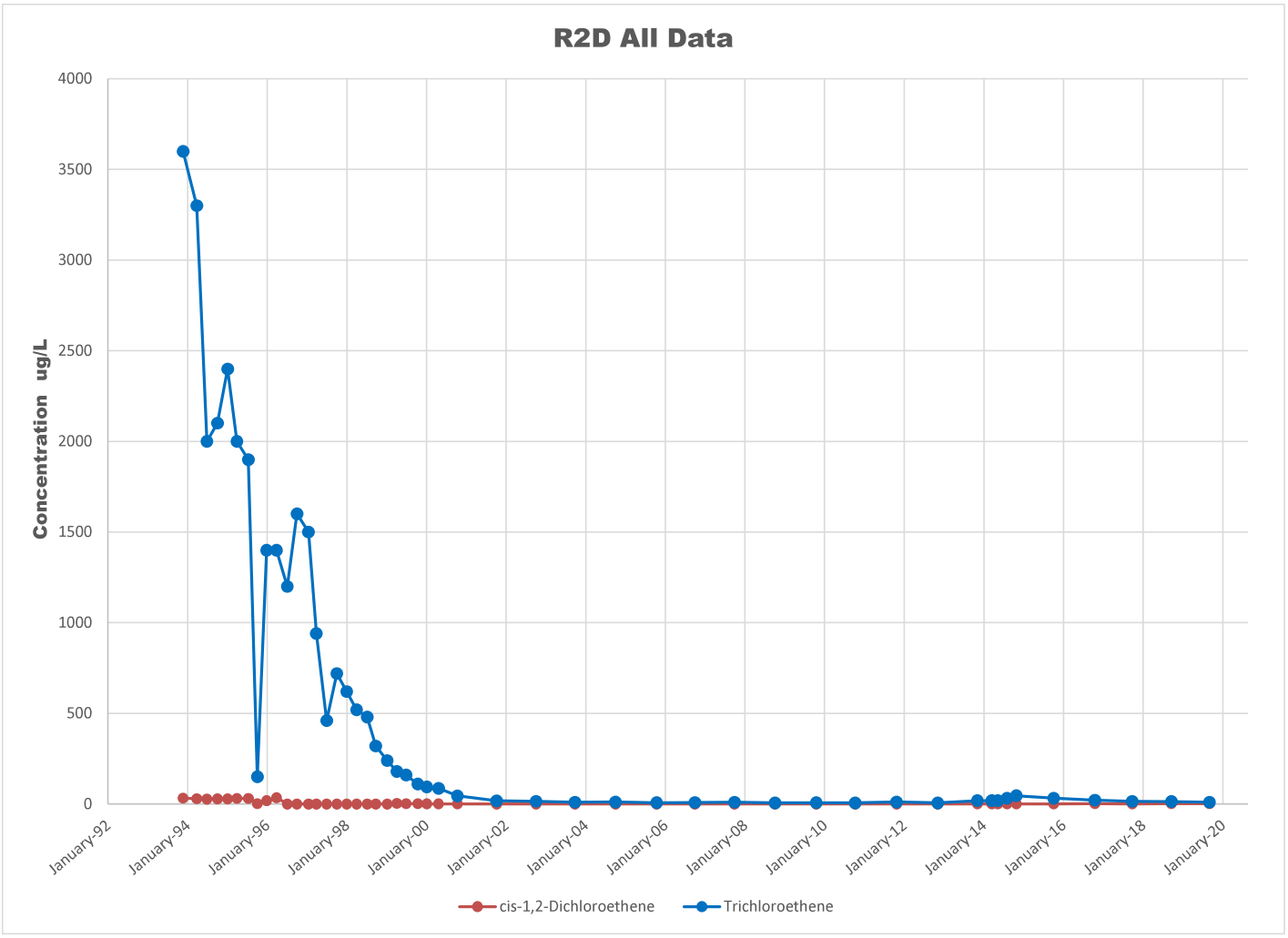

W52
Concentration ug/L
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

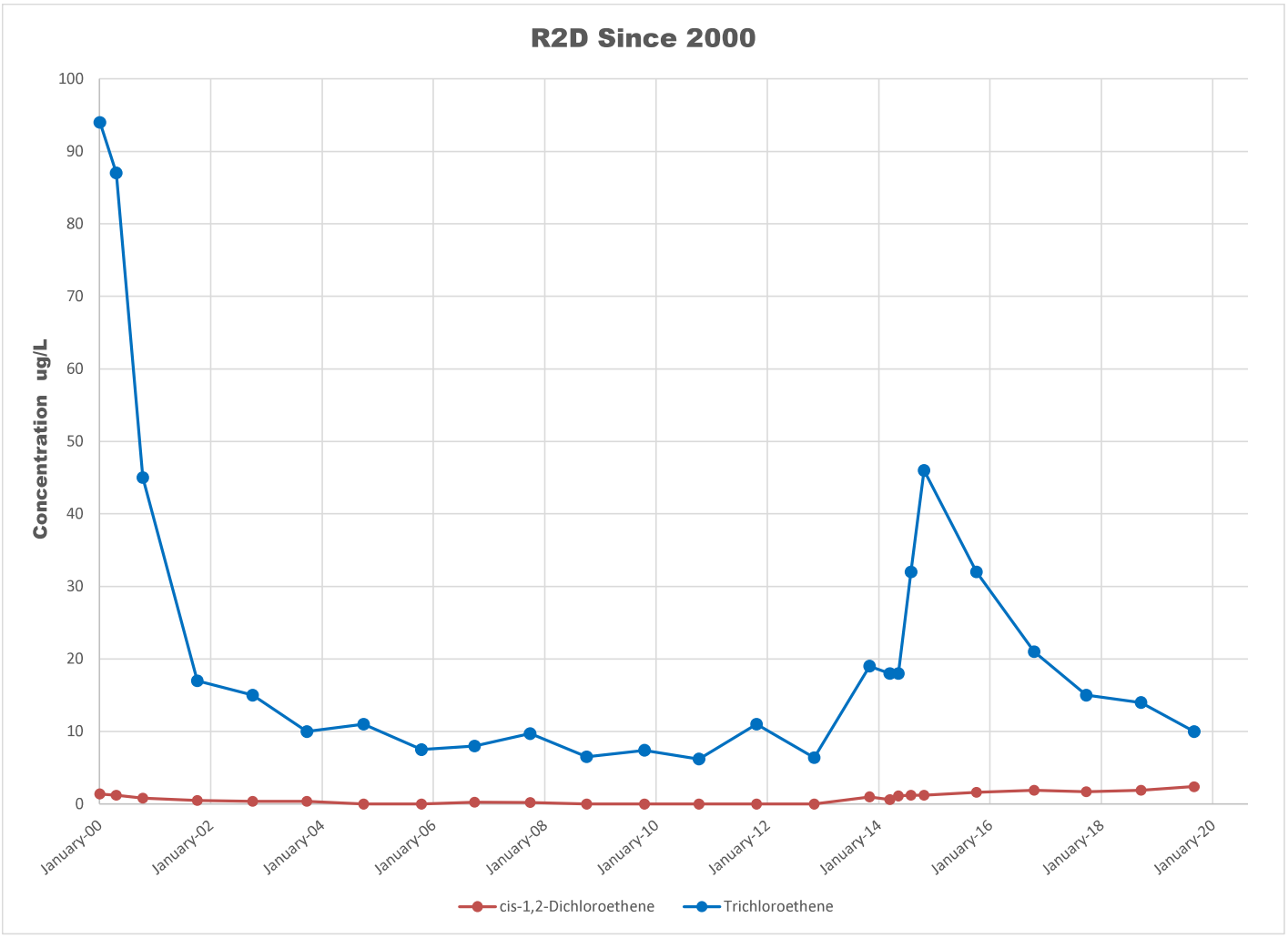

R4D All Data
Concentration ug/L
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

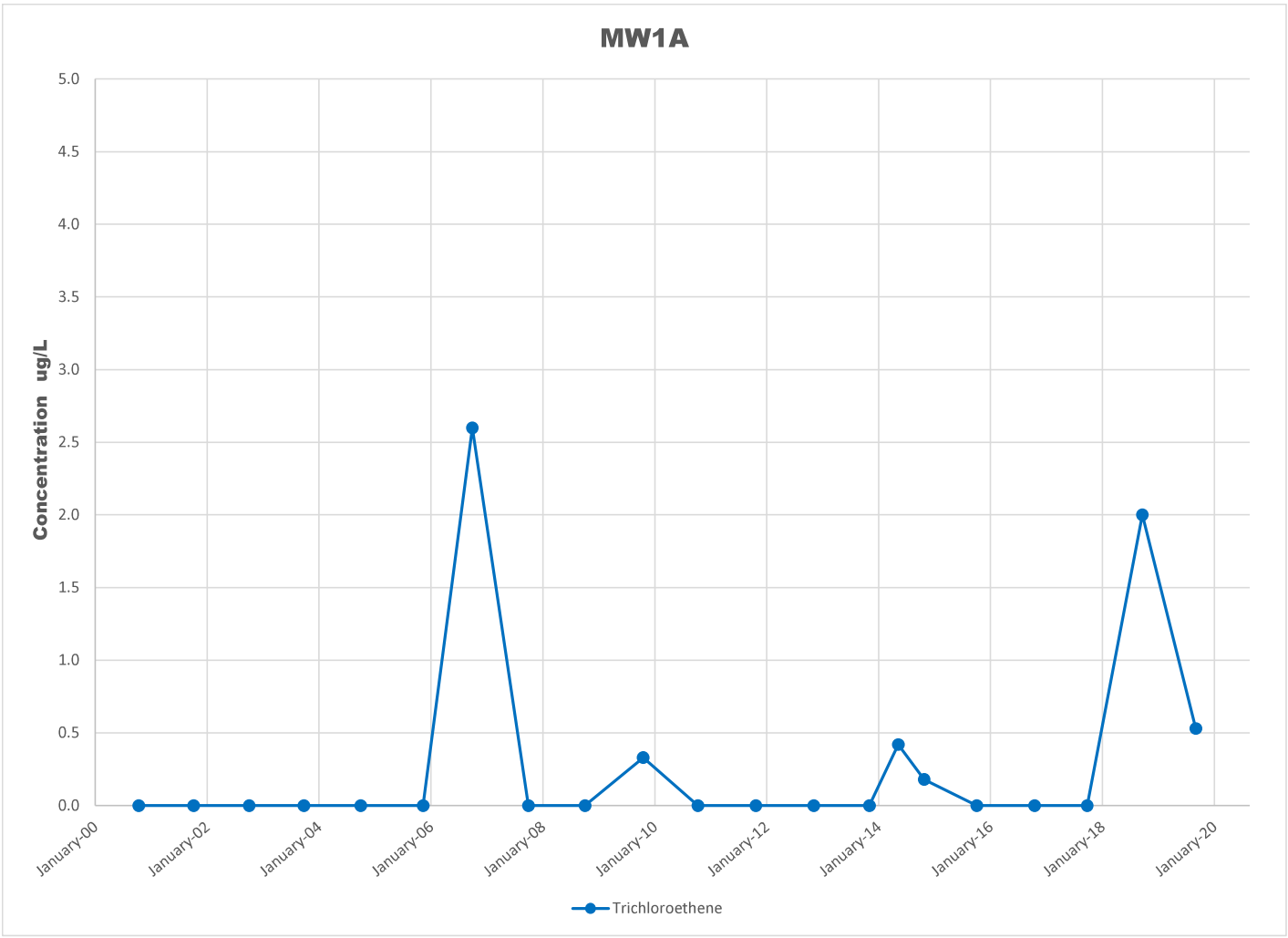

R4D Since 2000
Concentration ug/L
60
55
50
45
40
35
30
25
20
15
10
5
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

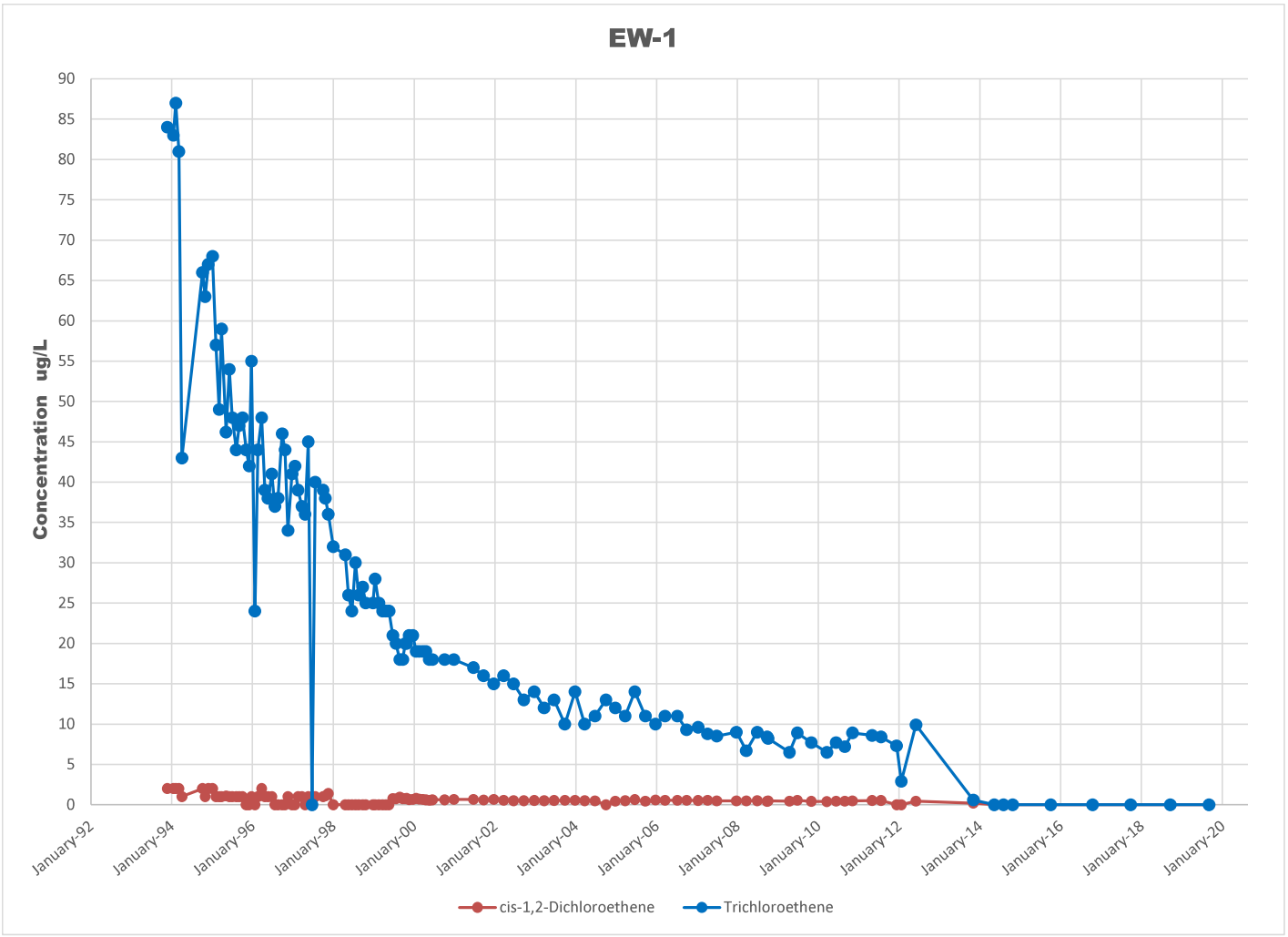

R3D All Data
Concentration ug/L
2000
1800
1600
1400
1200
1000
800
600
400
200
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

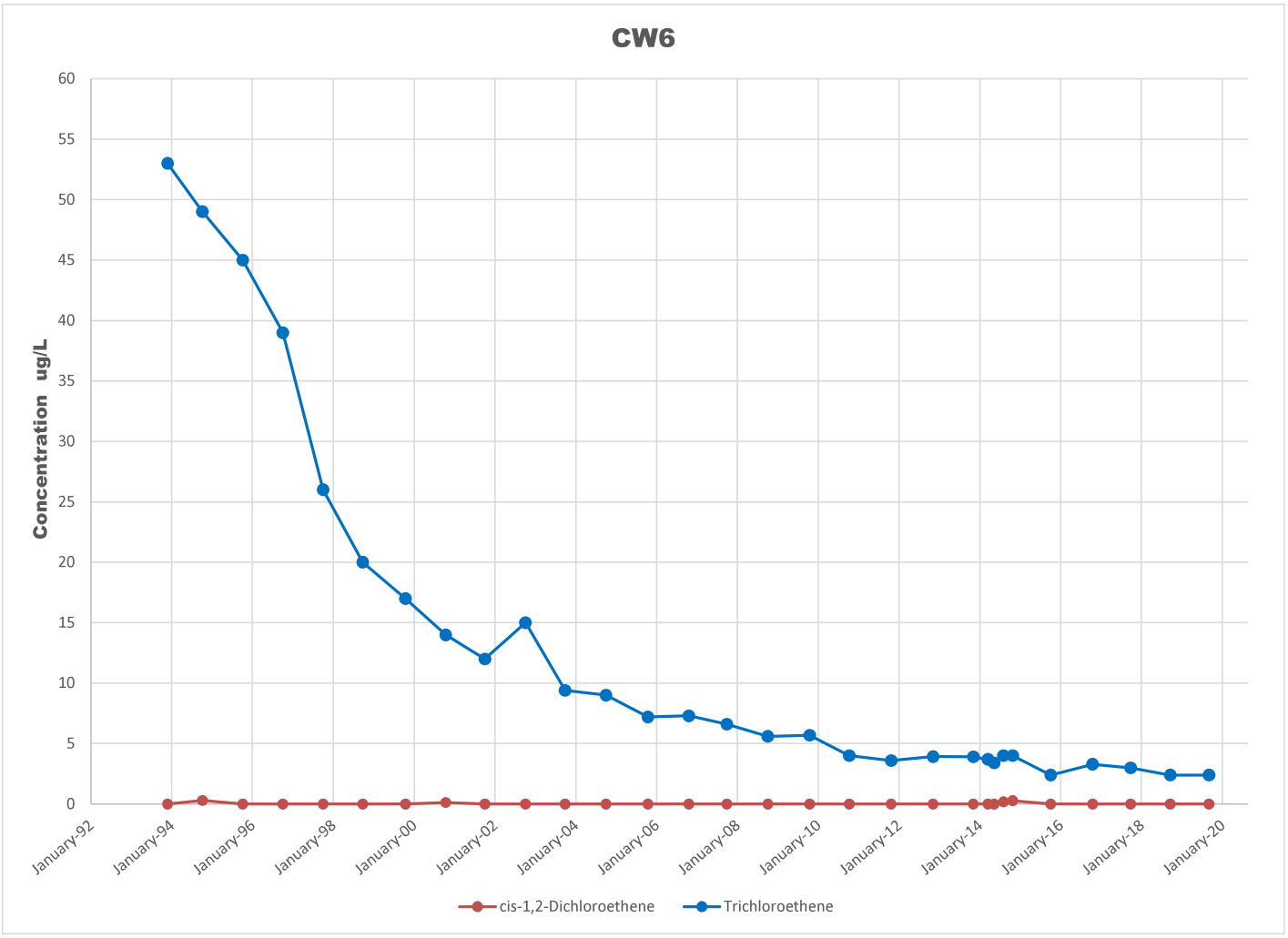

R3D Since 2011
Concentration ug/L
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
January-12
January-13
January-14
January-15
January-16
January-17
January-18
January-19
cis-1,2-Dichloroethene
Trichloroethene

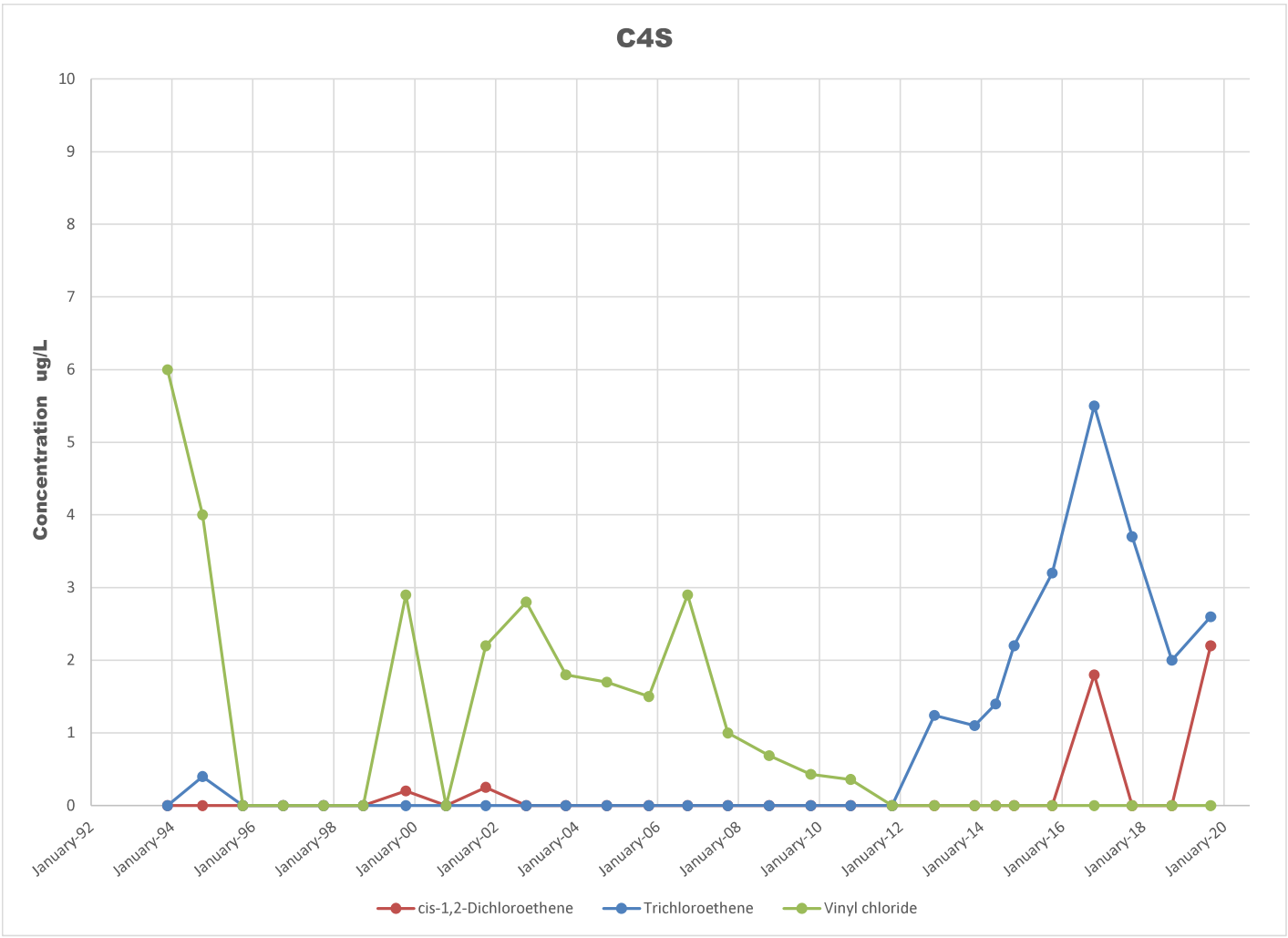

R2D All Data
Concentration ug/L
4000
3500
3000
2500
2000
1500
1000
500
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

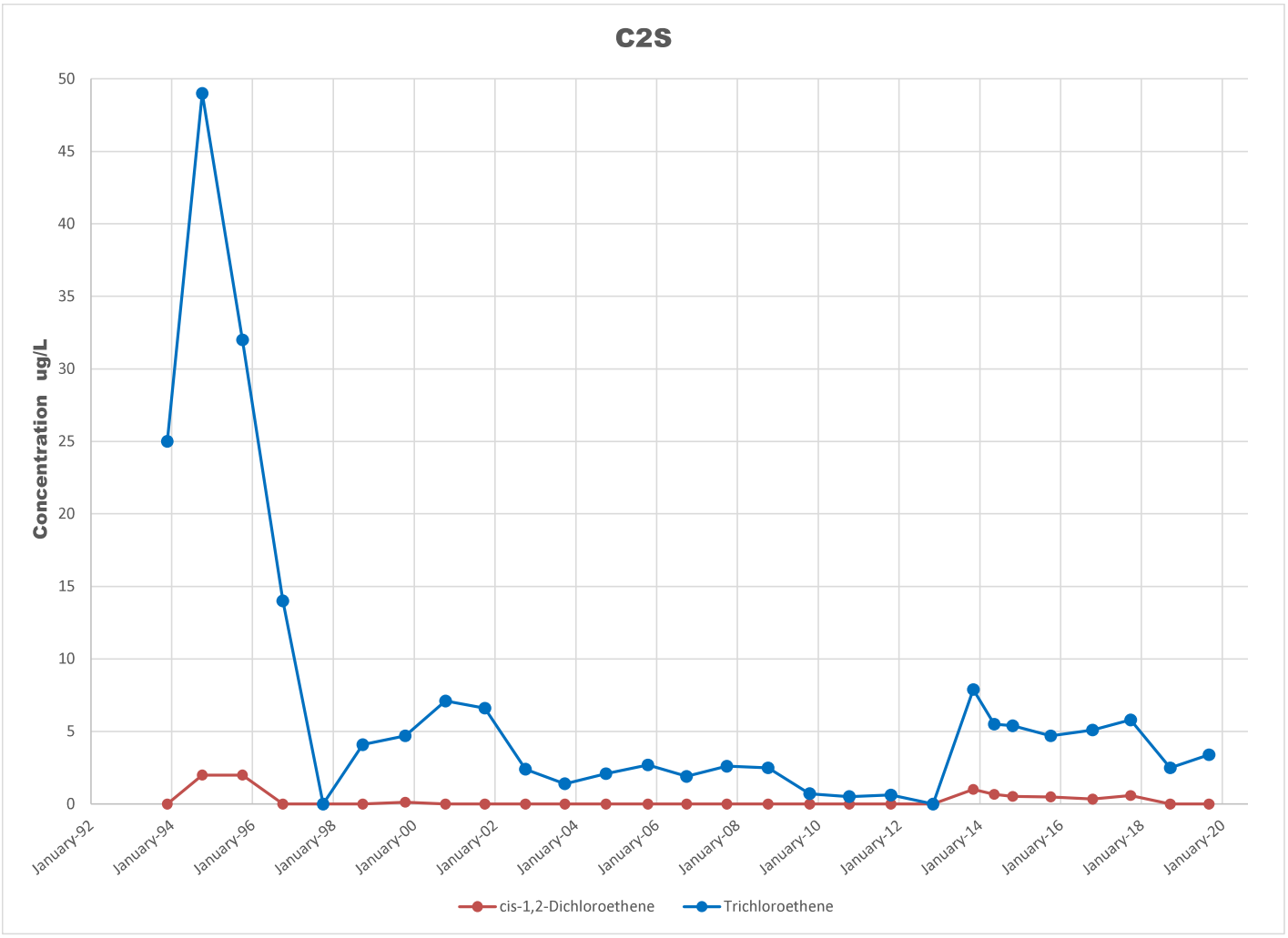

R2D Since 2000
Concentration ug/L
100
90
80
70
60
50
40
30
20
10
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene


MW1A
Concentration ug/L
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
Trichloroethene


EW-1
Concentration ug/L
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

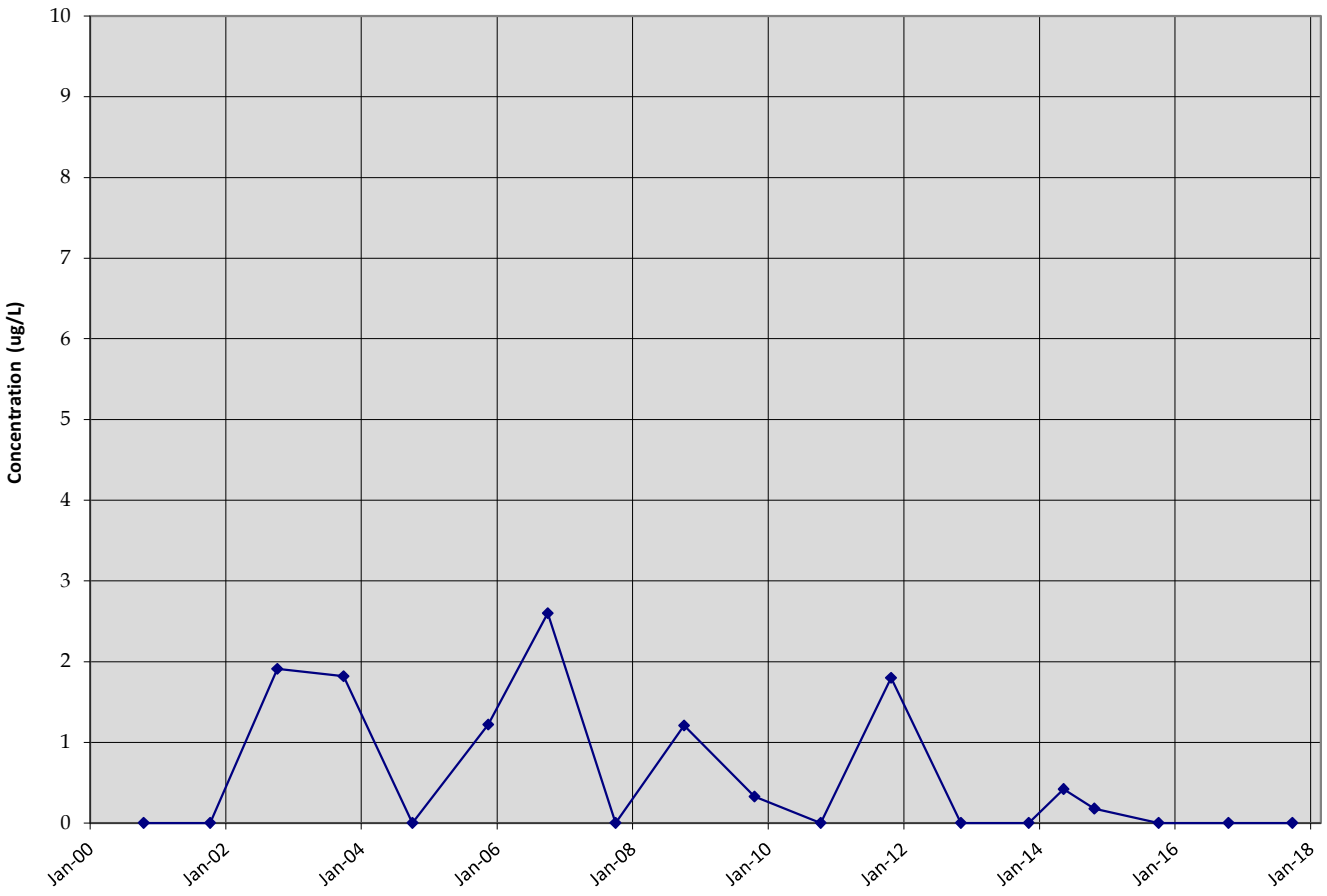

CW6
Concentration ug/L
60
55
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

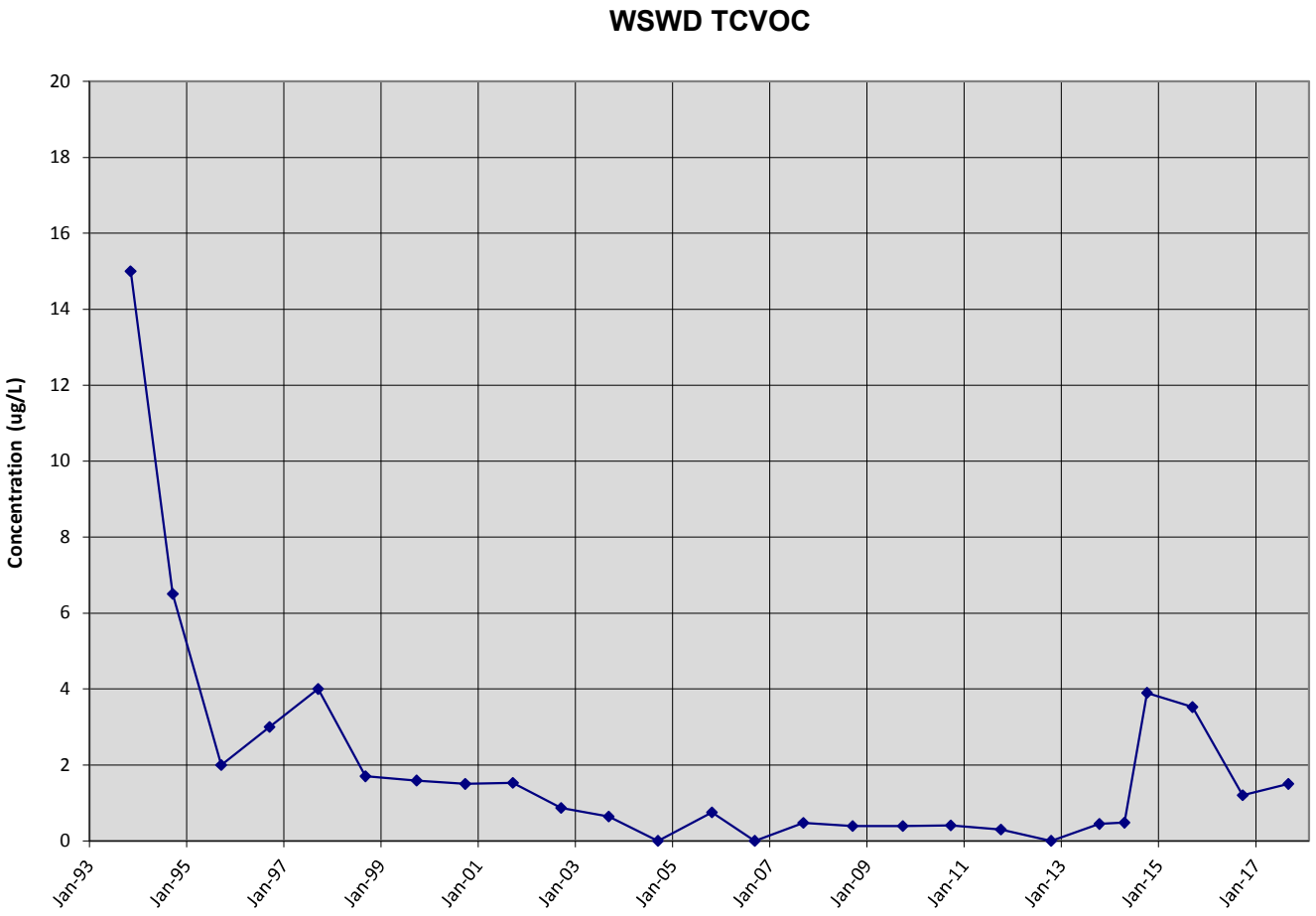

C4S
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene
Vinyl chloride

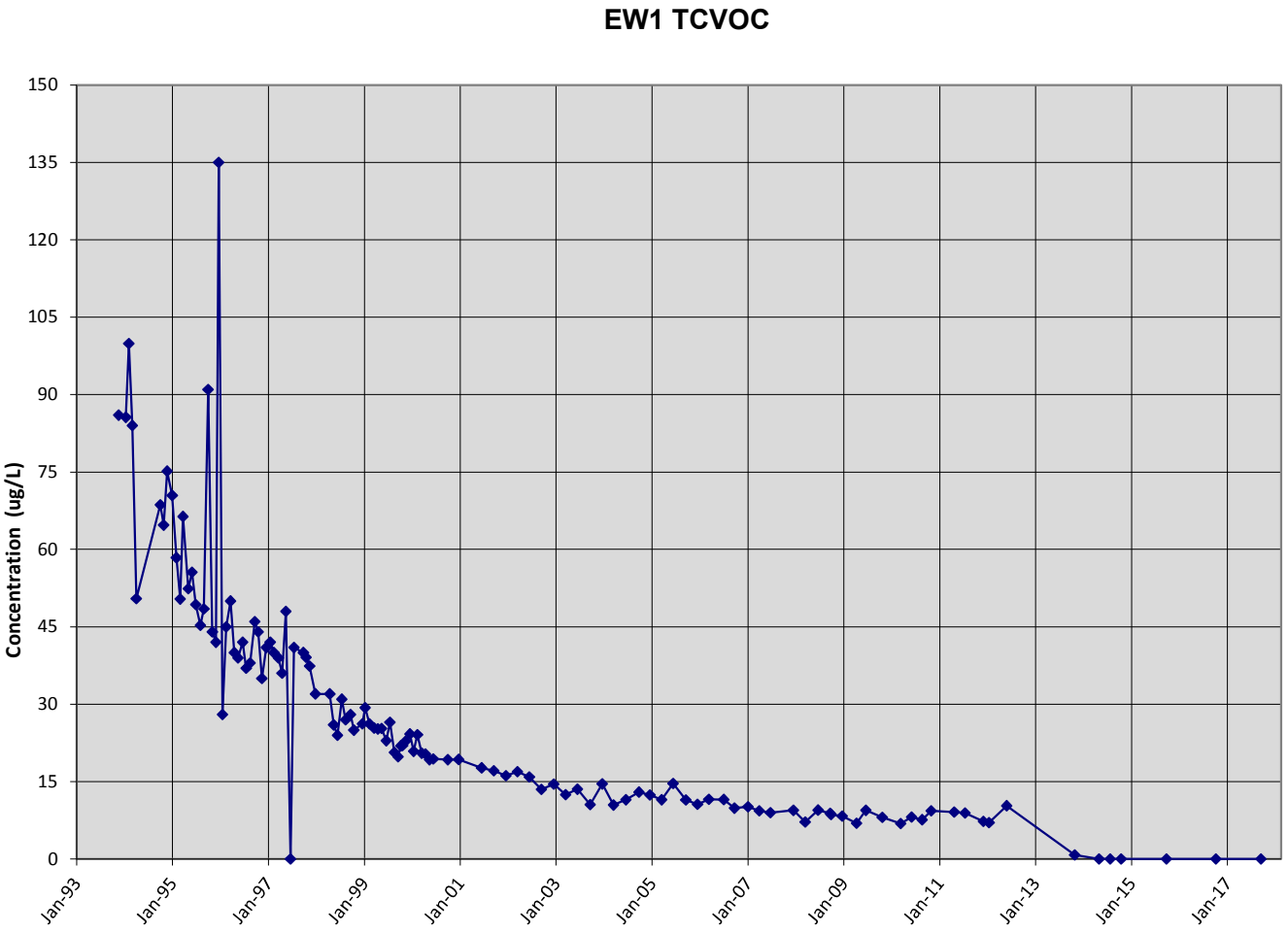

C2S
Concentration ug/L
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

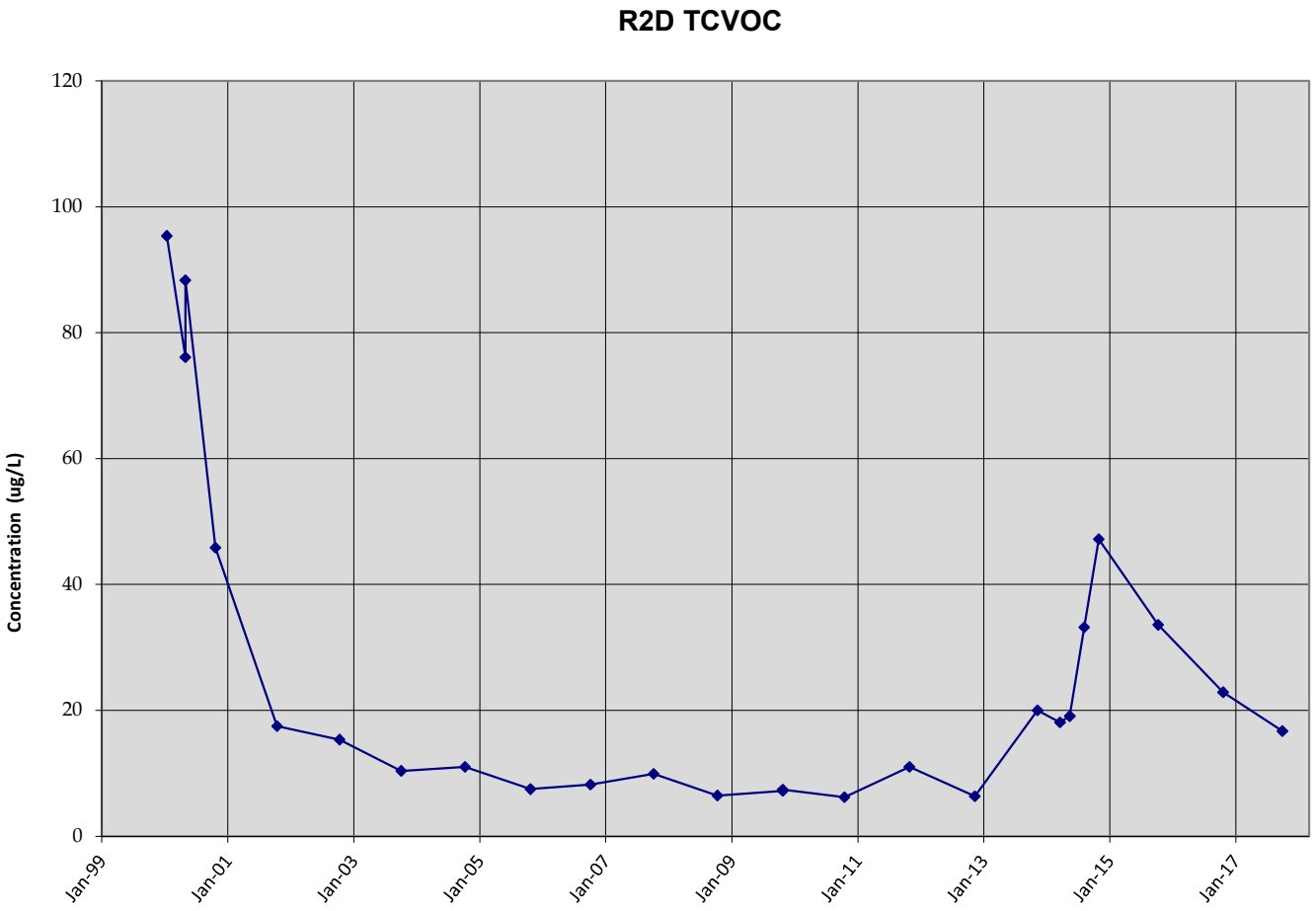
Wausau Site FYR
Figures 4 (A-P)

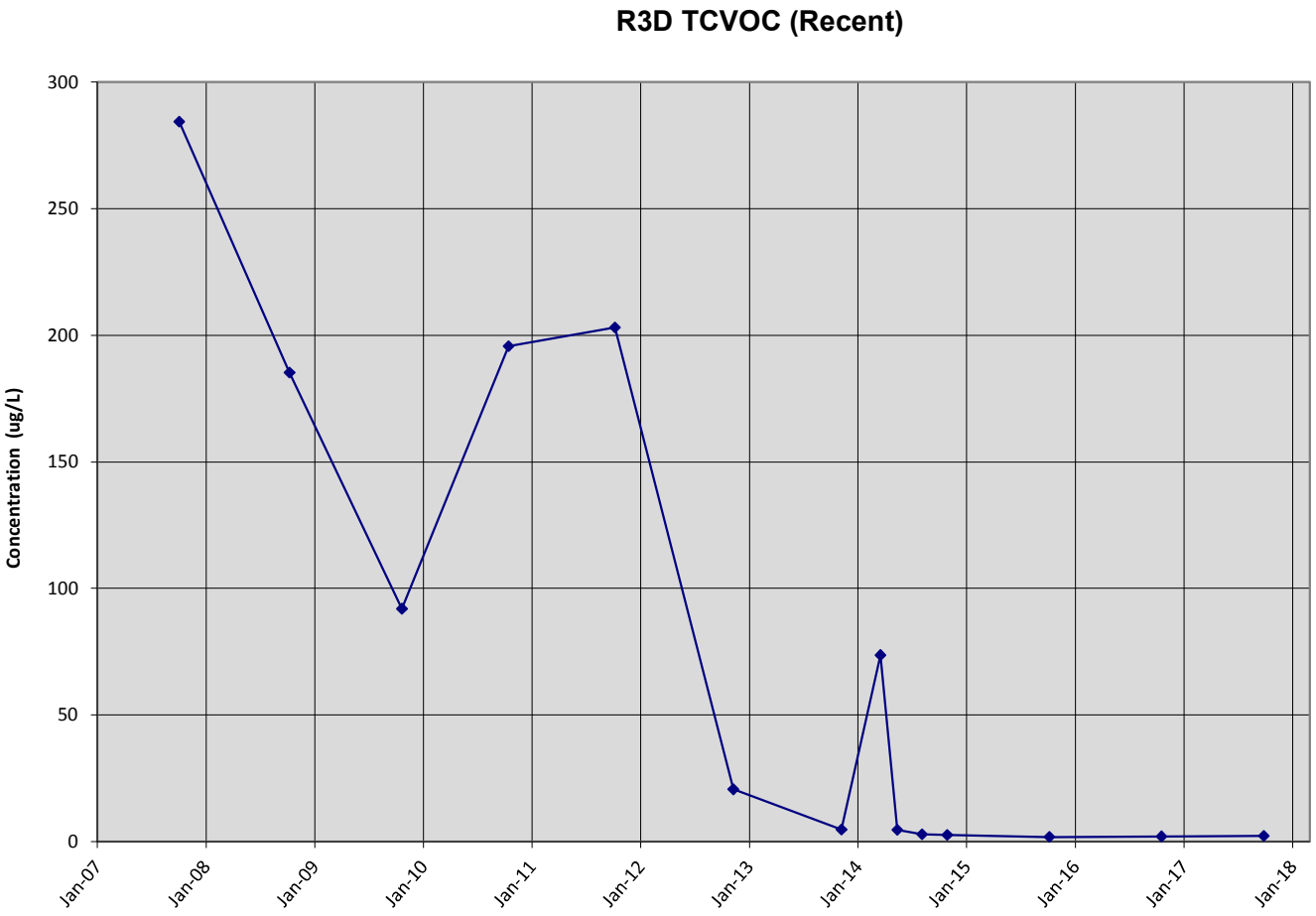
Graphs Depicting Total Chlorinated VOCs in Groundwater(historical thru 11/2019)

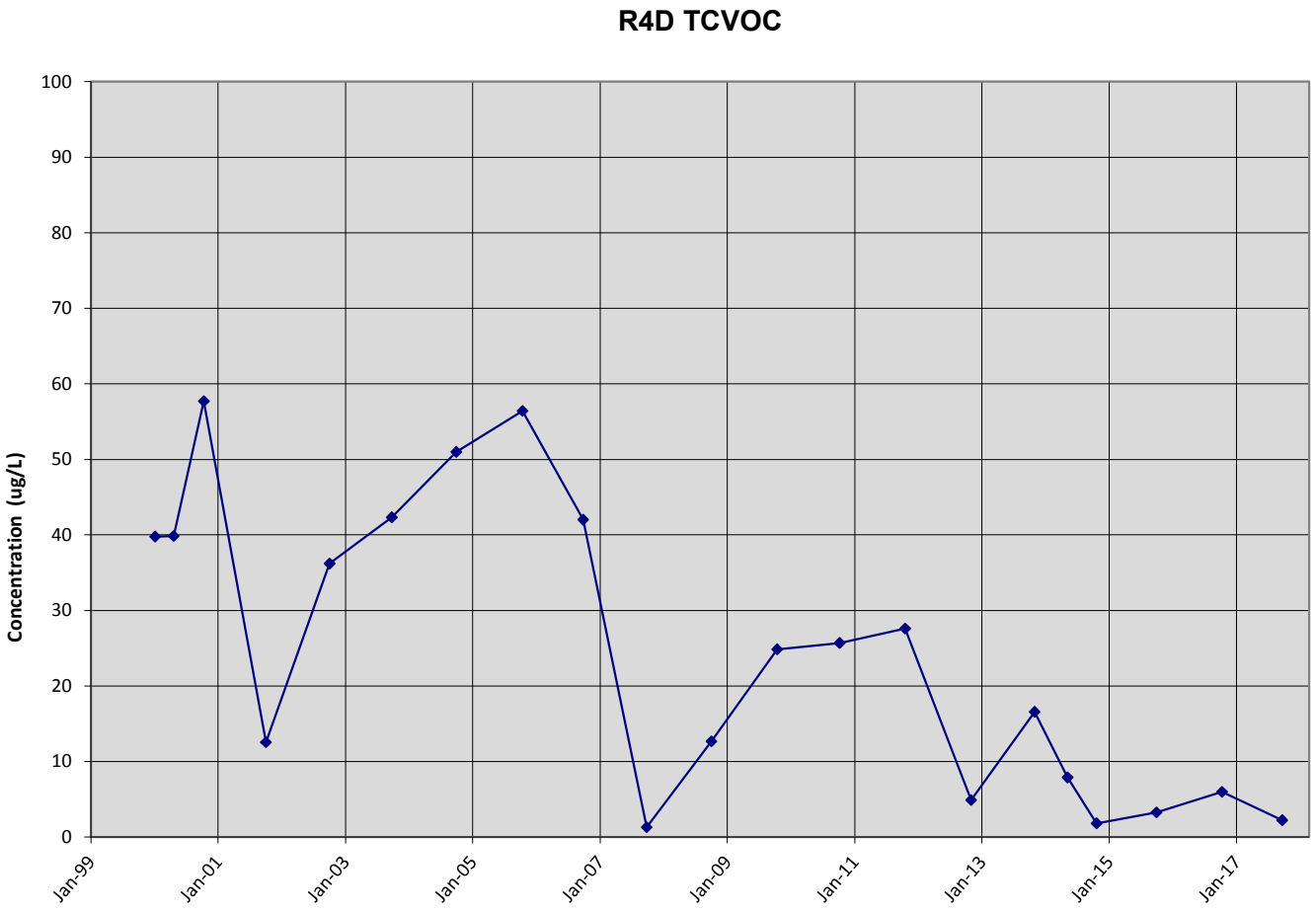



WSWD TCVOC
Concentration (ug/L)
20
18
16
14
12
10
8
6
4
2
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

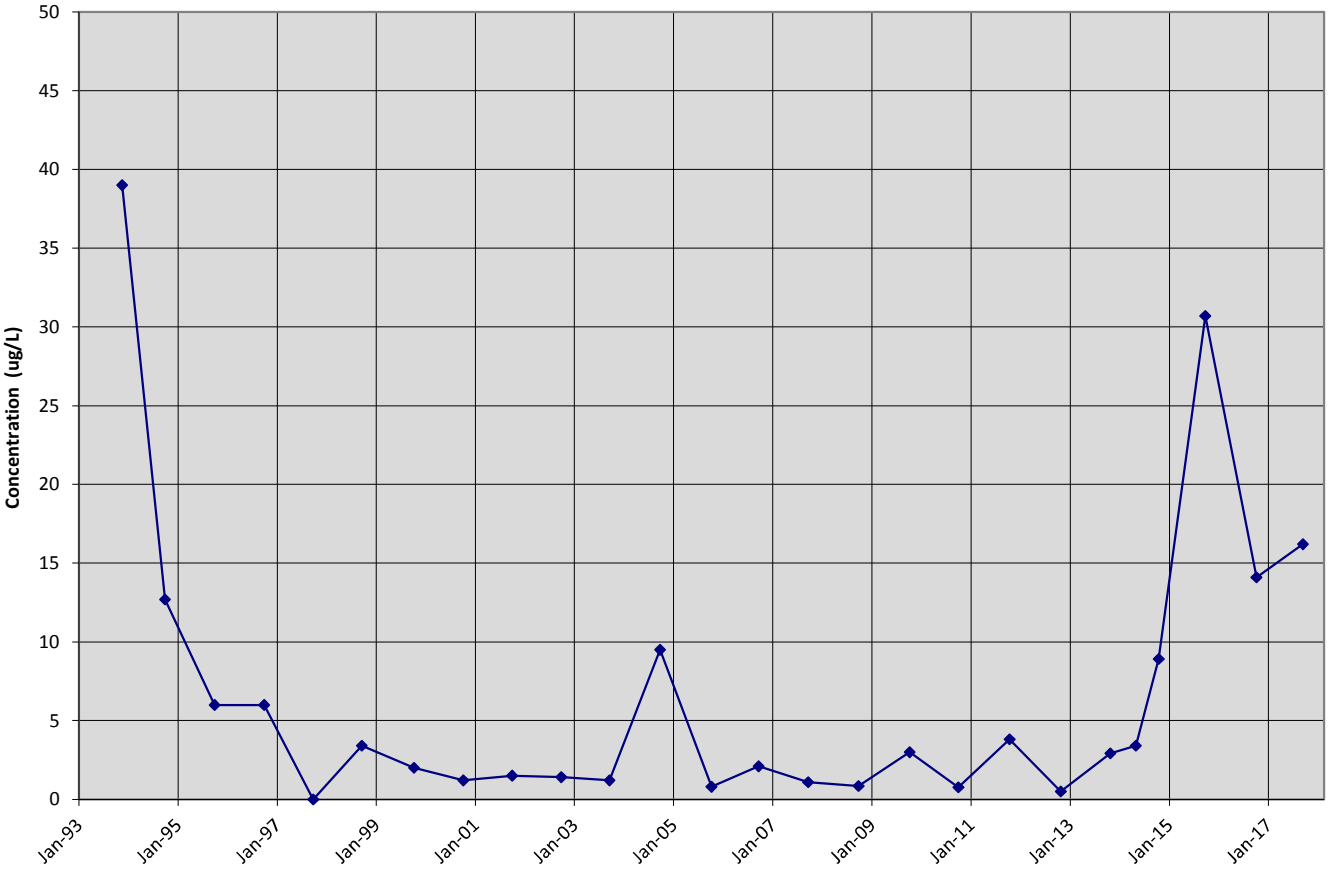

EW1 TCVOC
Concentration (ug/L)
150
135
120
105
90
75
60
45
30
15
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17


R2D TCVOC
Concentration (ug/L)
120
100
80
60
40
20
0
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

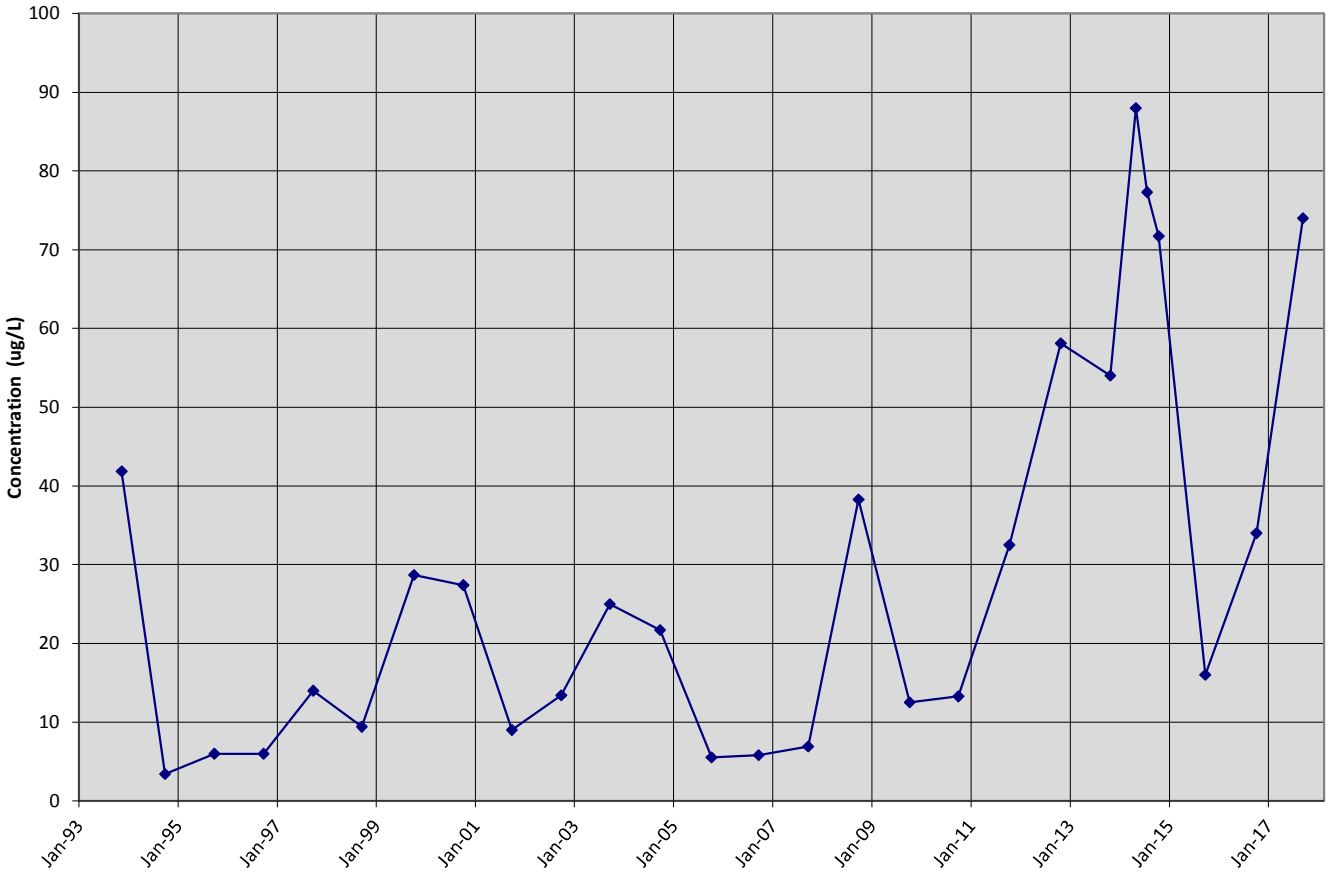

R3D TCVOC (Recent)
Concentration (ug/L)
300
250
200
150
100
50
0
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18


R4D TCVOC
Concentration (ug/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

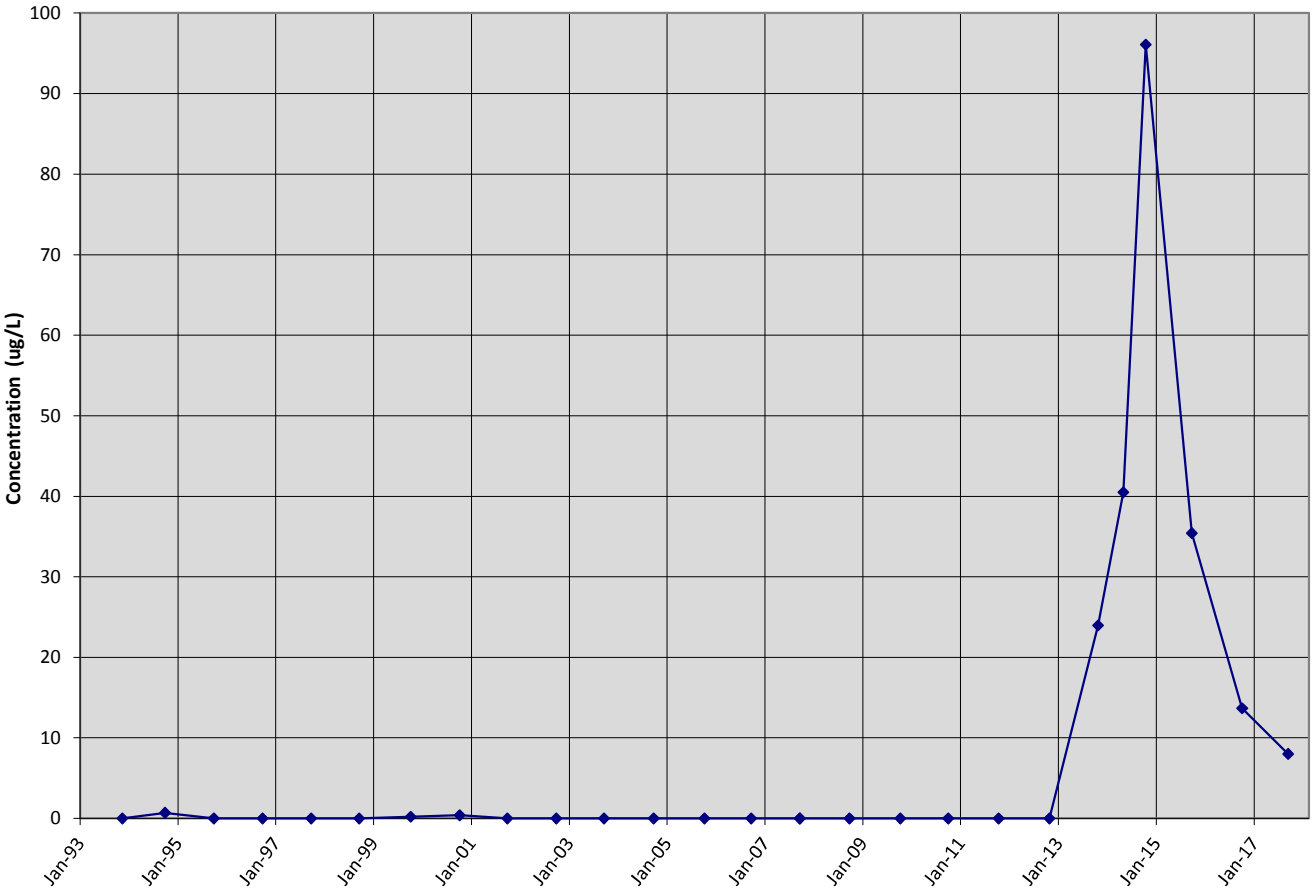
W52 TCVOC

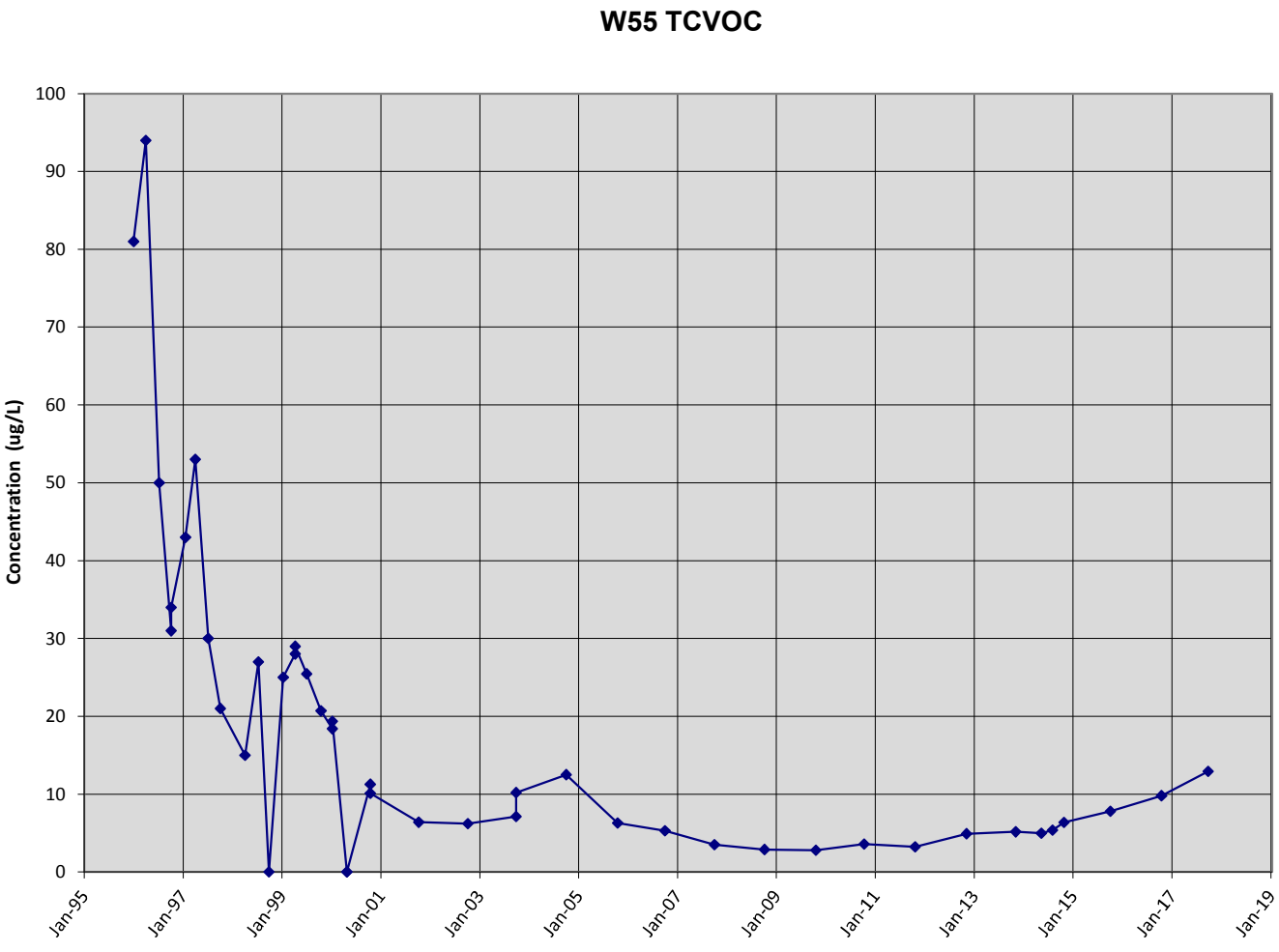

Concentration (ug/L)
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

W53A TCVOC

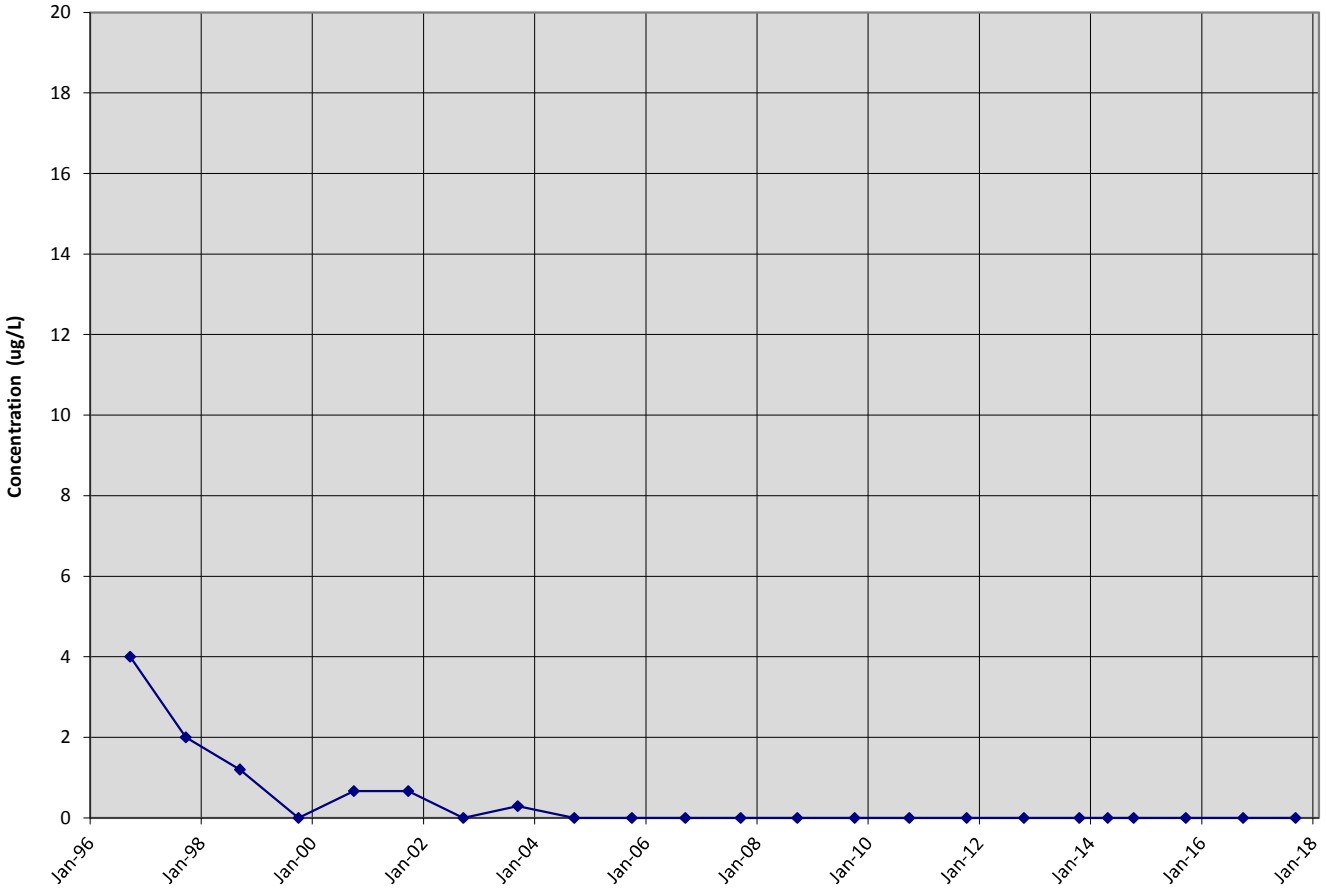

Concentration (ug/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

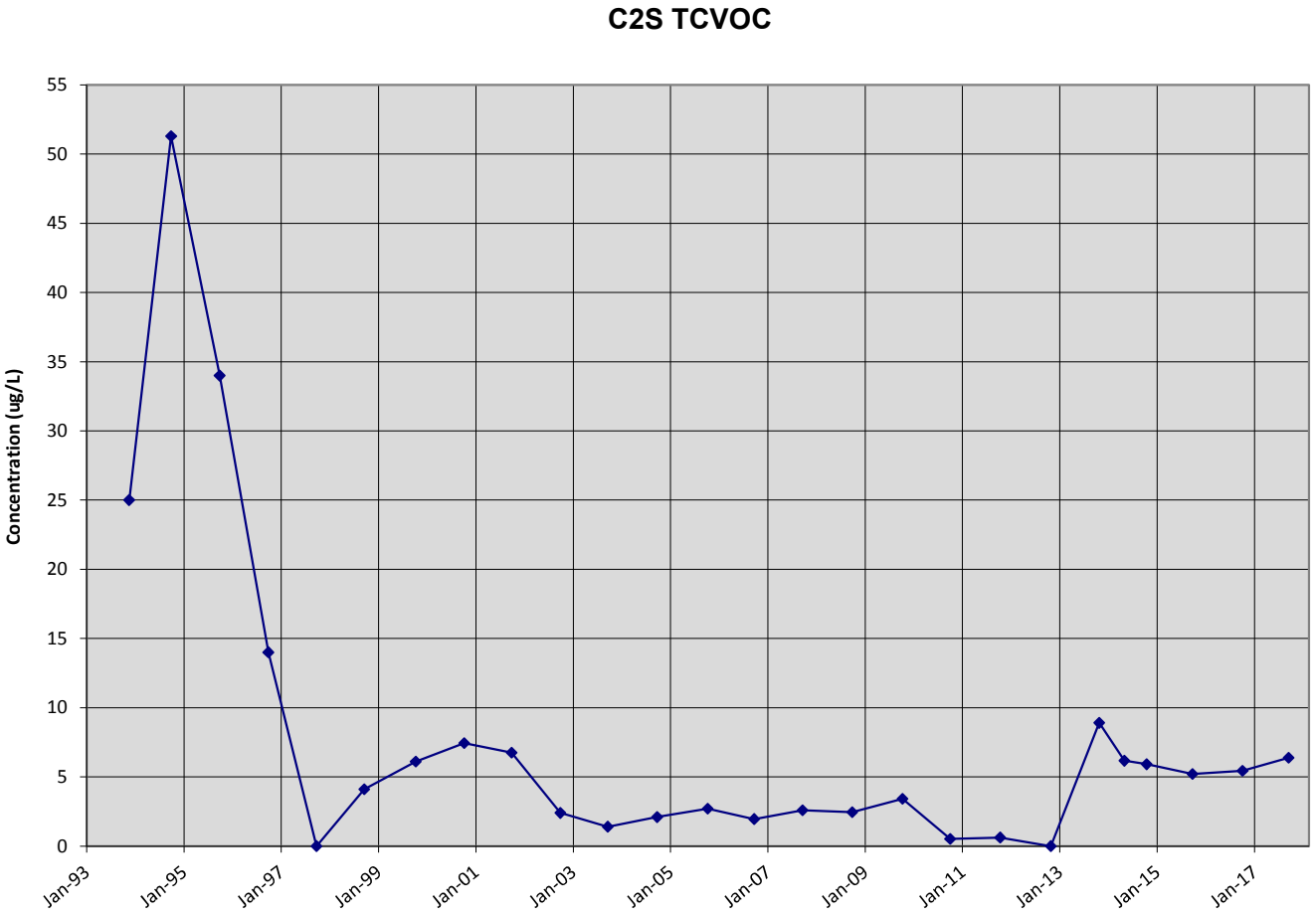
W54 TCVOC

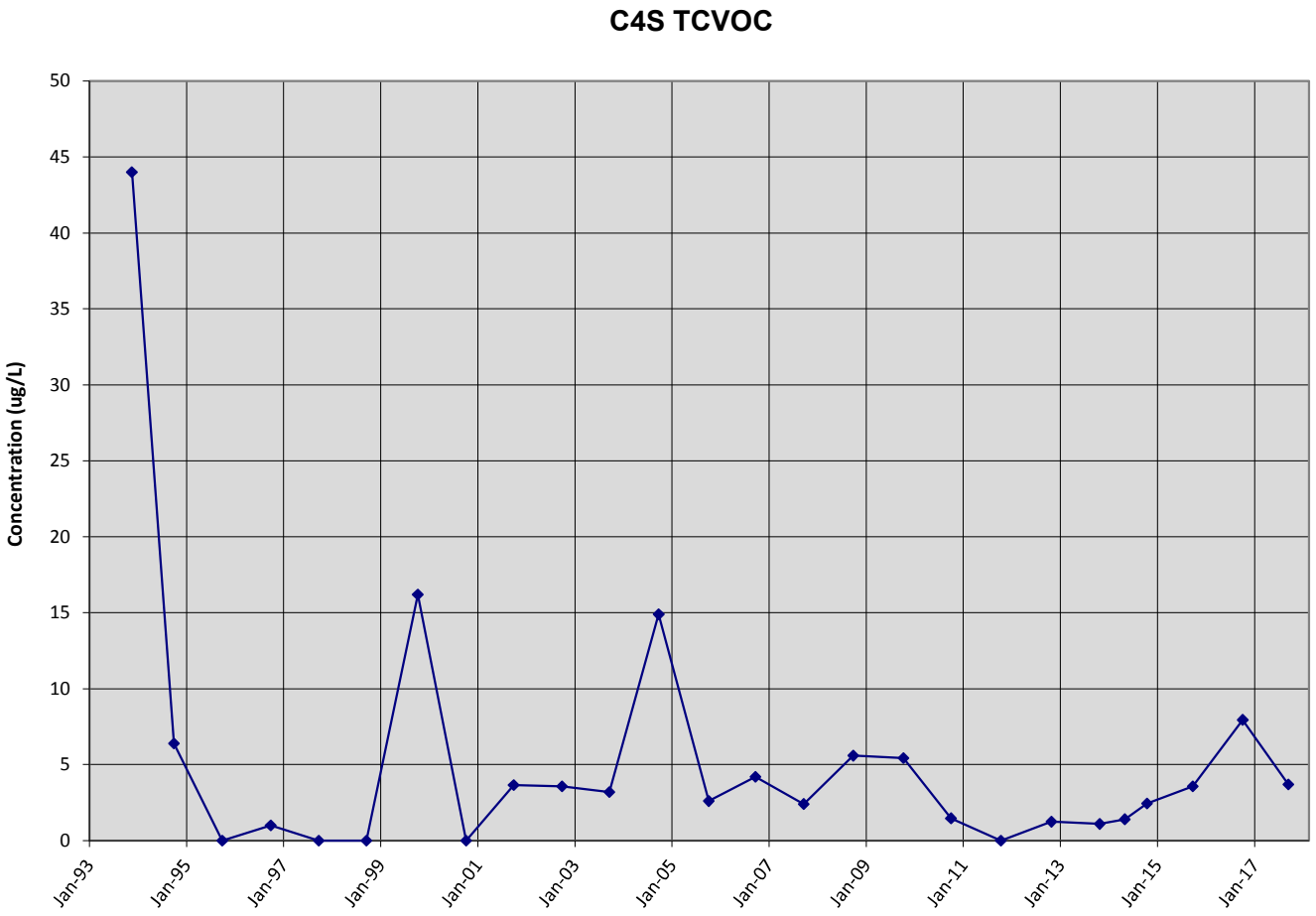

Concentration (ug/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17


W55 TCVOC
Concentration (ug/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
Jan-19

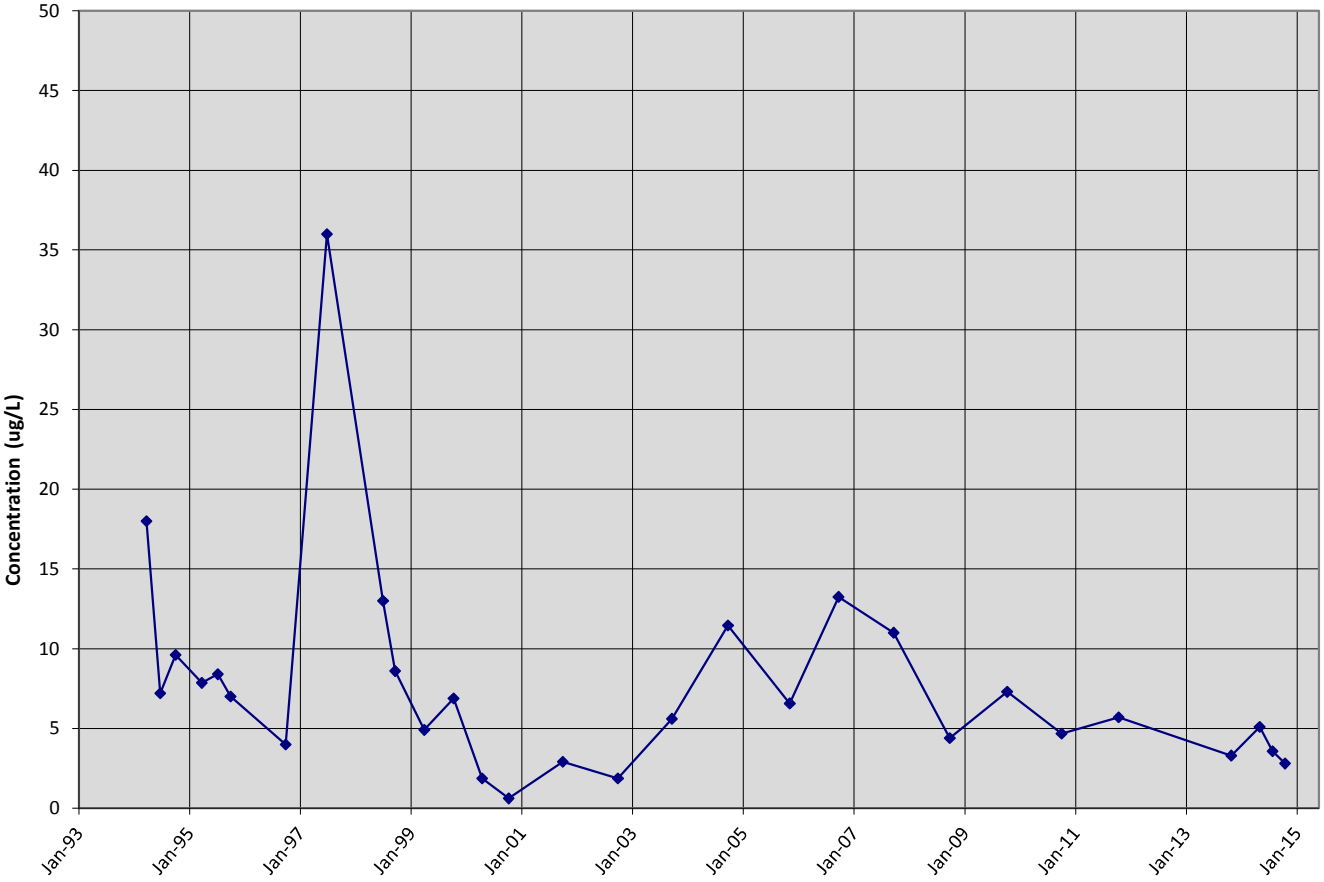
W56 TCVOC

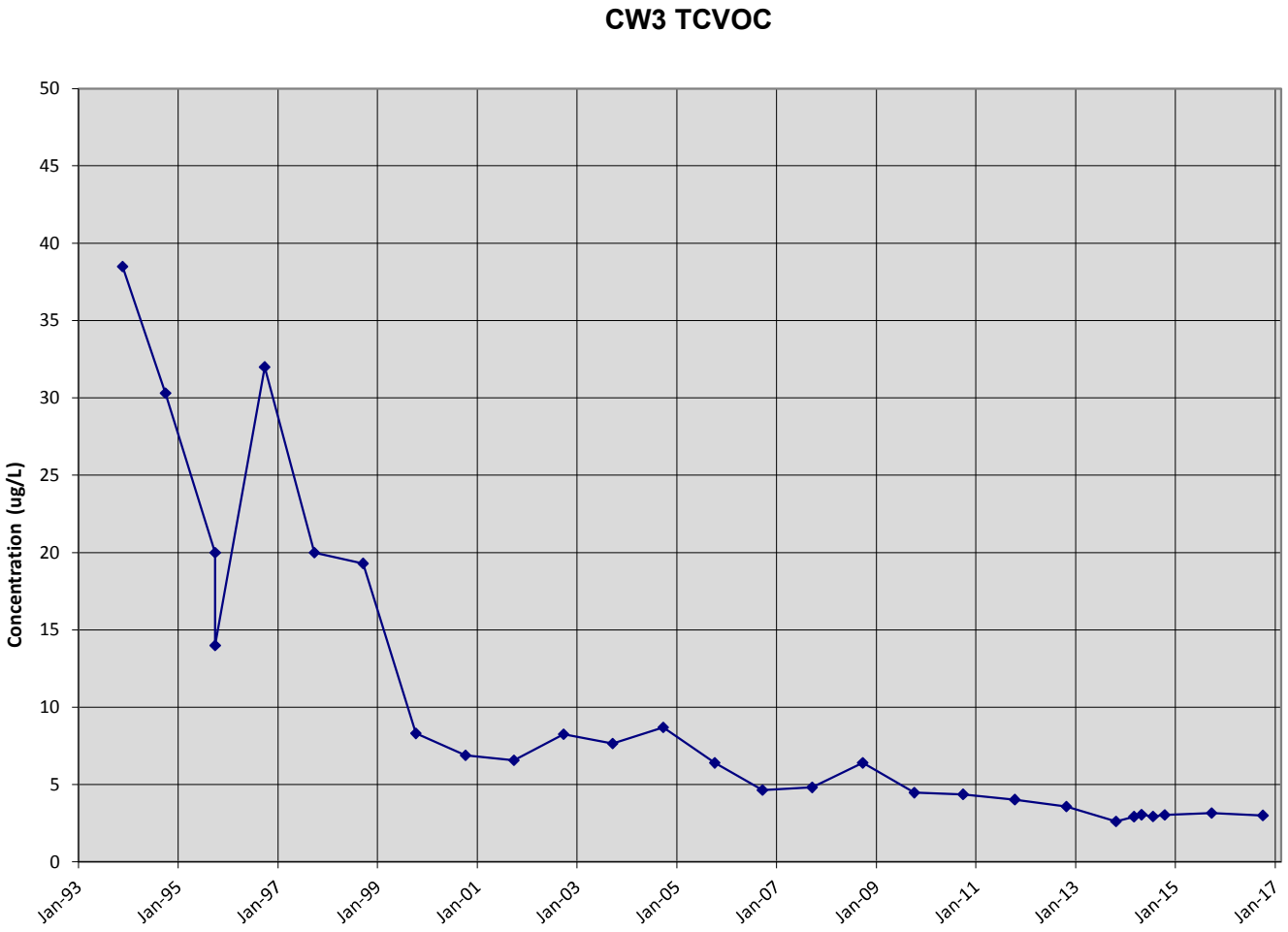

Concentration (ug/L)
20
18
16
14
12
10
8
6
4
2
0
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18


C2S TCVOC
Concentration (ug/L)
55
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

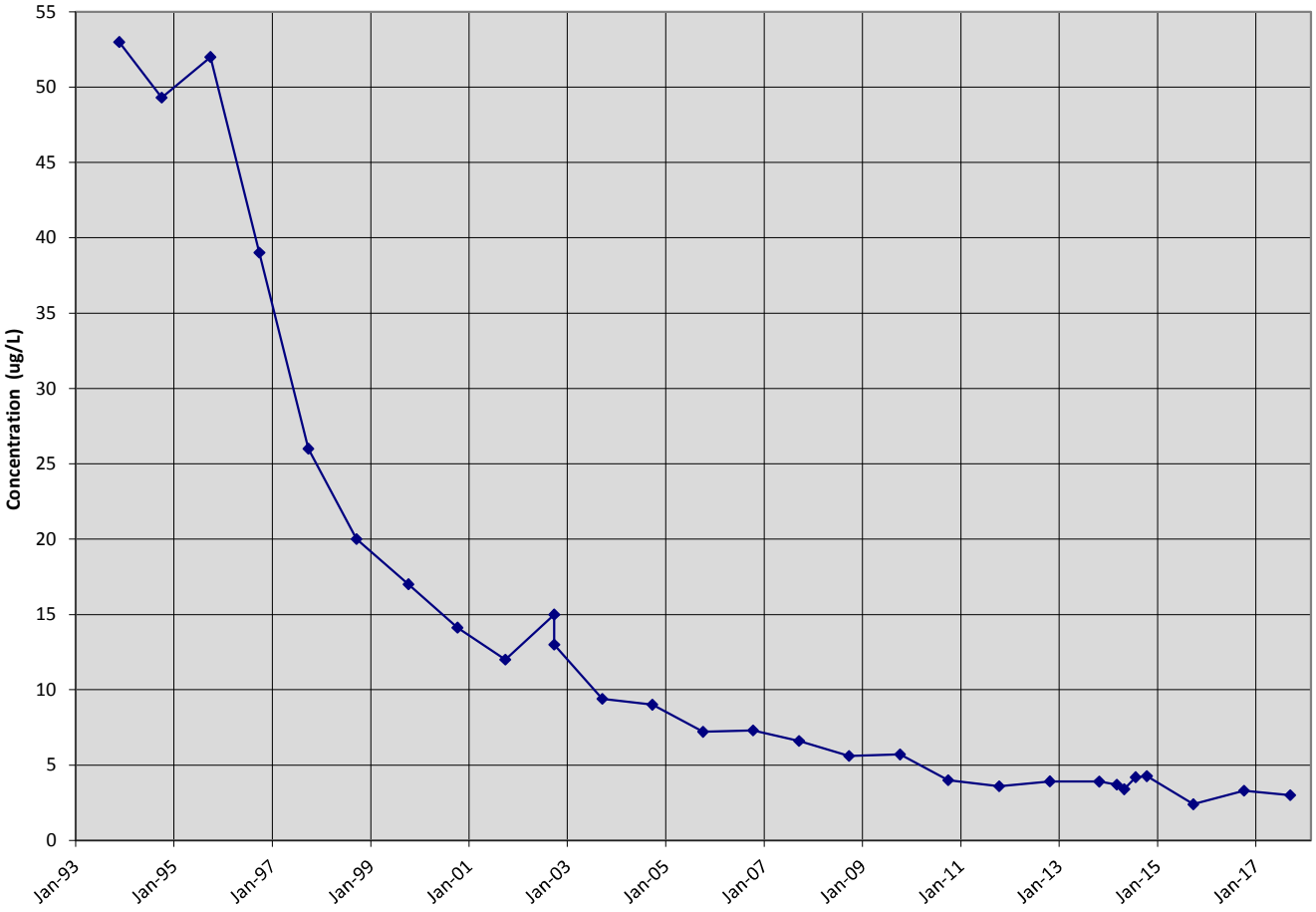

C4S TCVOC
Concentration (ug/L)
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

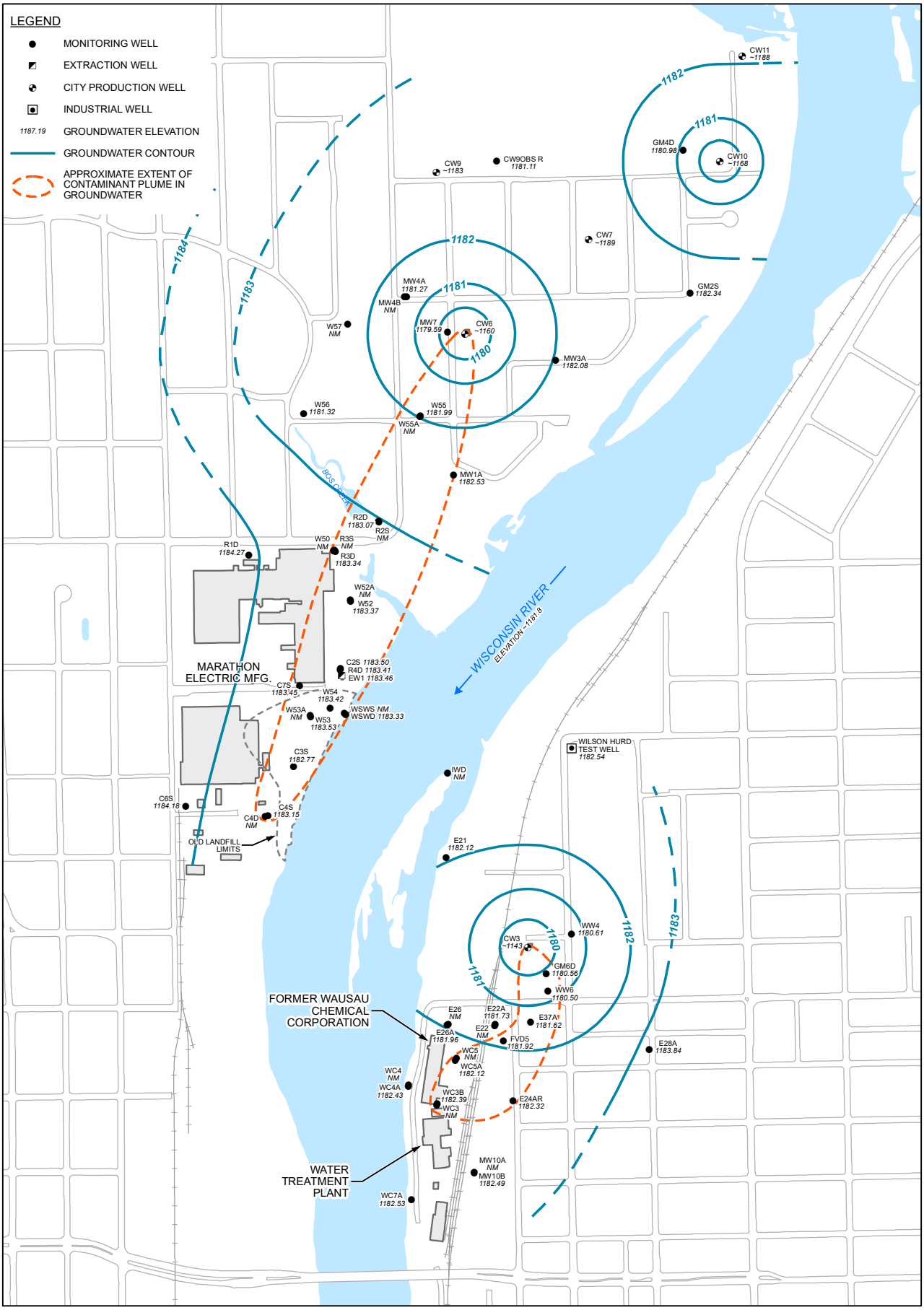
IWD TCVOC


Concentration (ug/L)
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15


CW3 TCVOC
Concentration (ug/L)
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17

CW6 TCVOC


Concentration (ug/L)
55
50
45
40
35
30
25
20
15
10
5
0
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17



Source: Marathon County

0 500 ft

N

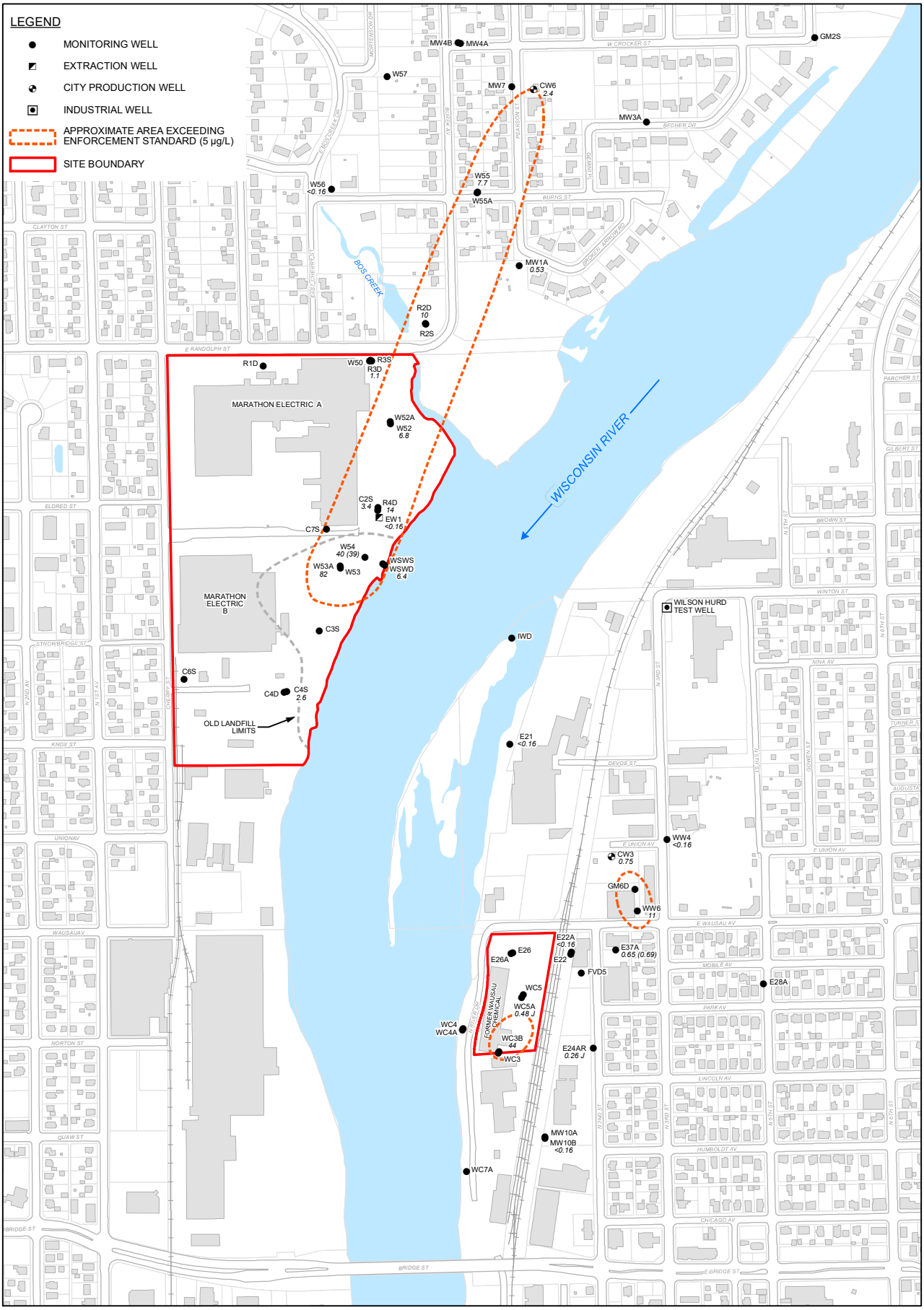
GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT
GROUNDWATER ELEVATIONS AND CONTOURS
SEPTEMBER 2019

003978-00
Jan 3, 2020

FIGURE 5 A

GIS File: I:\GIS\Projects\6-chars\00----\0039-\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP003.mxd



Source: Marathon County

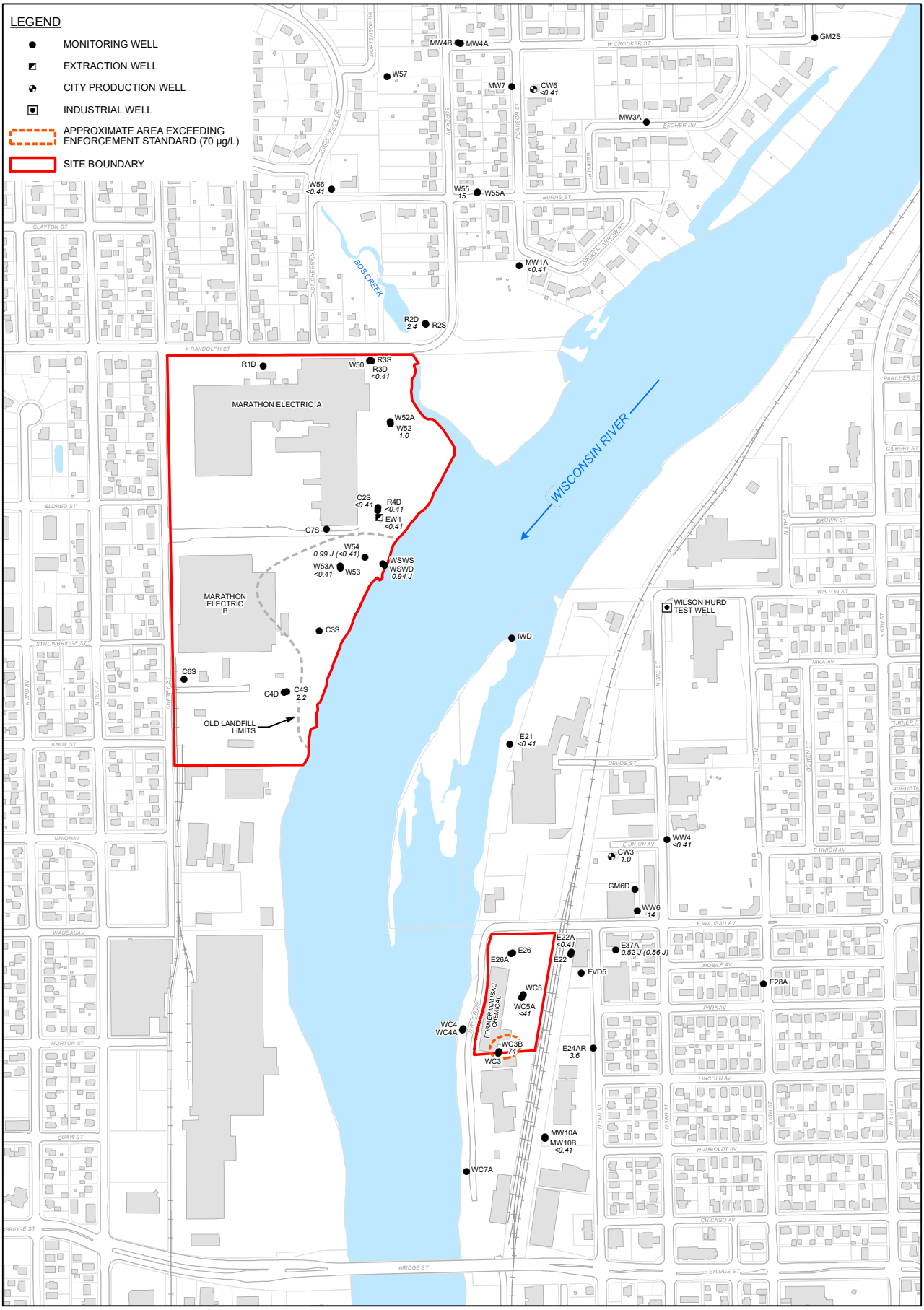
0 200 400 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT
TRICHLOROETHENE CONCENTRATIONS
SEPTEMBER 2019

003978-00
Jan 3, 2020

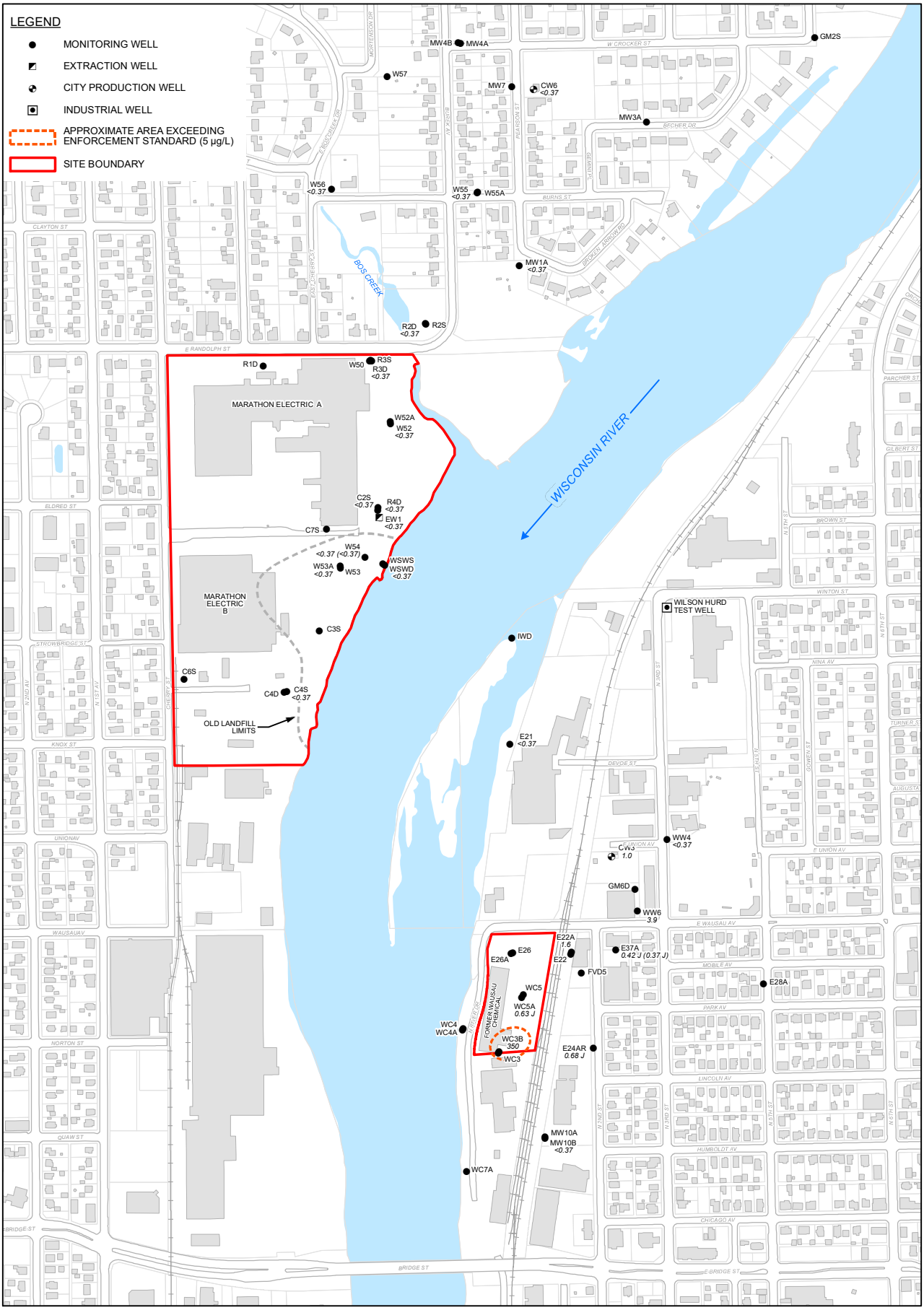
FIGURE 5 B

GIS File: I:\GIS\Projects\6-chars\00-----\0039-\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP004.mxd



Source: Marathon County

GIS File: I:\GIS\Projects\6-chars\00-----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP005.mxd



Source: Marathon County

0 200 400 ft

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT
TETRACHLOROETHENE CONCENTRATIONS
SEPTEMBER 2019

003978-00
Jan 3, 2020

FIGURE 5 D

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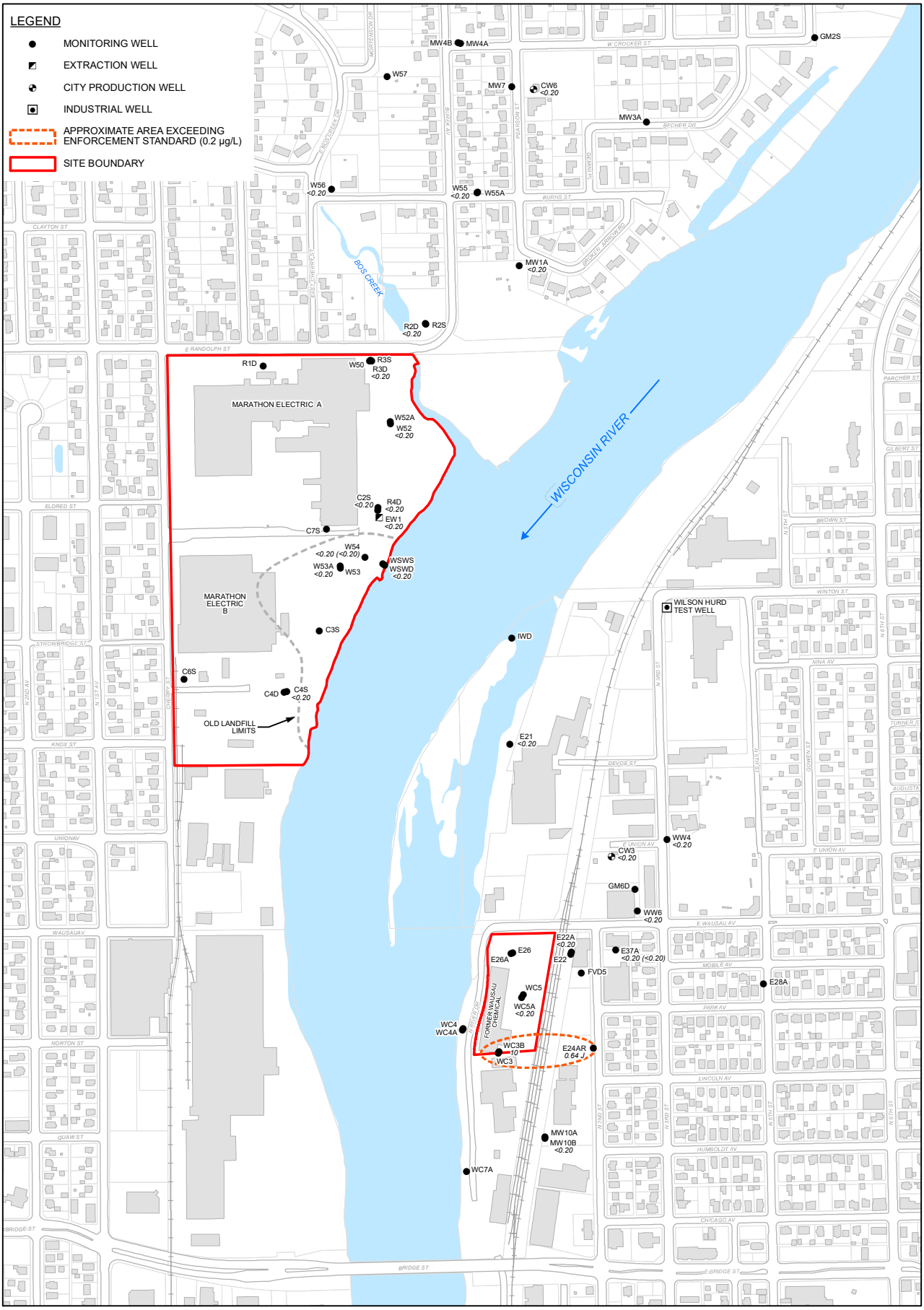


Source: Marathon County

0 200 400 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT
VINYL CHLORIDE CONCENTRATIONS
SEPTEMBER 2019

003978-00
Jan 3, 2020

FIGURE 5 E

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP007.mxd

LEGEND

- CITY PRODUCTION WELL LOCATION
- EXTRACTION WELL LOCATION
- INDUSTRIAL WELL LOCATION
- MONITORING WELL LOCATION
- PRIVATE WELL SURVEY AREA
- SITE PARCEL BOUNDARY

N

0 500 ft

CW11
TIERNEY RD
GM4D
CW10
CW9 OBS R
CW9
BUGBEE AV
BUREK AV
PEARSON ST
GEMINI PL
MARTEN ST
BECHER DR
MCCARTHY BLVD
BRISBANE CT
CW7
MORTENSON DR
BOS CREEK DR
CHERRY ST
LENARD ST
MW4B
MW4A
GM2S
CROCKER ST
W57
MW7
CW6
MW3A
BECHER DR
GEMINI PL
SPRING ST
W56
BURNS ST
W55A
W55
CLAYTON ST
BIRCH ST
BROKEN ARROW RD
MW1A
ORCHARD ST
N 1ST AV
EAST CHERRY ST
R2D
R2S
RANDOLPH ST
PARCHER ST
R1D
R3S
R3D
W50
W52A
W52
GILBERT ST
WISCONSIN RIVER
ELDRED ST
MARATHON ELECTRIC MFG.
C2S
R4D
EW1
C7S
BROWN ST
N 5TH ST
W54
W53A
W53
WSWD
WSWS
WINTON ST
WILSON HURD TEST WELL
STROWBRIDGE ST
C3S
IWD
NINA AV
C6S
C4S
C4D
TURNER ST
KNOX ST
E21
DEVOE ST
GOWEN ST
AUGUSTA AV
OLD LANDFILL LIMITS
UNION AV
WW4
E UNION AV
JOZIK ST
CW3
GM6D
WW6
E WAUSAU AV
WAUSAU AV
WAUSAU CHEMICAL COMPANY
E26
E26A
E22A
E22
E37A
FVD5
MOBILE AV
CENTER ST
E28A
PARK AV
WC5
WC5A
WC4
WC4A
NORTON ST
WC3B
WC3
E24AR
LINCOLN AV
WATER TREATMENT PLANT
N 3RD ST
N 5TH ST
N 6TH ST
N 7TH ST
N 8TH ST
MW10A
MW10B
HUMBOLDT AV
QUAW ST
WC7A
N 2ND ST
CHICAGO AV
BRIDGE ST
E BRIDGE ST
N 1ST ST

figure 6

PRIVATE WELL SURVEY AREA
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(034)GIS-SP003 FEB 18/2015

Wisconsin Department of Natural Resources

Well / Drillhole / Borehole Filling & Sealing **Form 3300-005**

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295 and 299, Wis. Stats., and ch. NR 141 Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose.

Date of Filling & Sealing: 01/01/2010 **Rec #: 119302**

Verification. Check only if well filling & sealing was done previously and you are just verifying that work.: No

1. Well Location Information

County: Marathon		**WI Unique Well #:**		**DNR Hicap Well #:**	
Latitude: (DD.DDDDD°) 44.9854 °N		**Longitude: (DD.DDDDD°)** 89.6256 °W		**GPS Method Code:** GPS008	
Gov't Lot #:	**Qtr/Qtr:** NE	**Quarter:** NW	**Section #:** 24	**Township #:** 29 North	**Range #:** 7 East
Well Street Address: 1619 BECHER DR				**Subdivision Name:**	
Well City/Village/Town: City of WAUSAU		**Well Zip Code:** 54401	**Lot #:**	**Does a new well replace this well?**	
Reason for Filling & Sealing: not being used				**WI Unique Well # of Replacement Well:**	

2. Facility / Owner Information

Facility Name:	**FID #:**	**License/Permit/Monitoring #:**	
Original Well Owner:	**Service Category:**		
Present Well Owner: ROGER BURK	**Mailing Address of Present Owner:** 1619 BECHER DR		
	City: WAUSAU	**State:** WI	**Zip Code:** 54401

3. Well / Drillhole / Borehole Information

Well Type: Water Well	**Original Construction Date:** (mm/dd/yyyy)	**Construction Type:** Drilled
Formation Type: Unconsolidated Formation	**Total Well Depth From Ground Surface (ft.):** 44.00	**(specify Other):**
Casing Diameter (in.): 6.00	**Lower Drillhole Diameter (in.):**	**Casing Depth (ft.):**
Was well annular space grouted? Unknown	**If yes, to what depth (ft.)?**	**Depth to Water (ft.):** 27.00

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	Yes	**Liner(s) removed?**	N/A	**If no, was liner perforated?**	
Screen removed?	No	**Casing/Loop left in place?**	Yes	**Was casing cut off below surface?**	No
Did sealing material rise to surface?	Yes	**Did material settle after 24 hours?**	No	**If yes, was hole retopped?**	
If bentonite chips were used, were they hydrated with water from a known water source?					Yes
Method of Placing Sealing Material: Screened & Poured (Bentonite Chips)				**(Explain Other):**	
Water Well Sealing Materials: Bentonite Chips				**Monitoring Wells & other Drillholes:**	

5. Material Used to Fill Well / Drillhole

Material:	From (ft.):	To (ft.):	# and Units of Sealant:	Mix Ratio or Mud Weight:
chipped bentonite	**Surface**	44.00	12 bags	50# bag

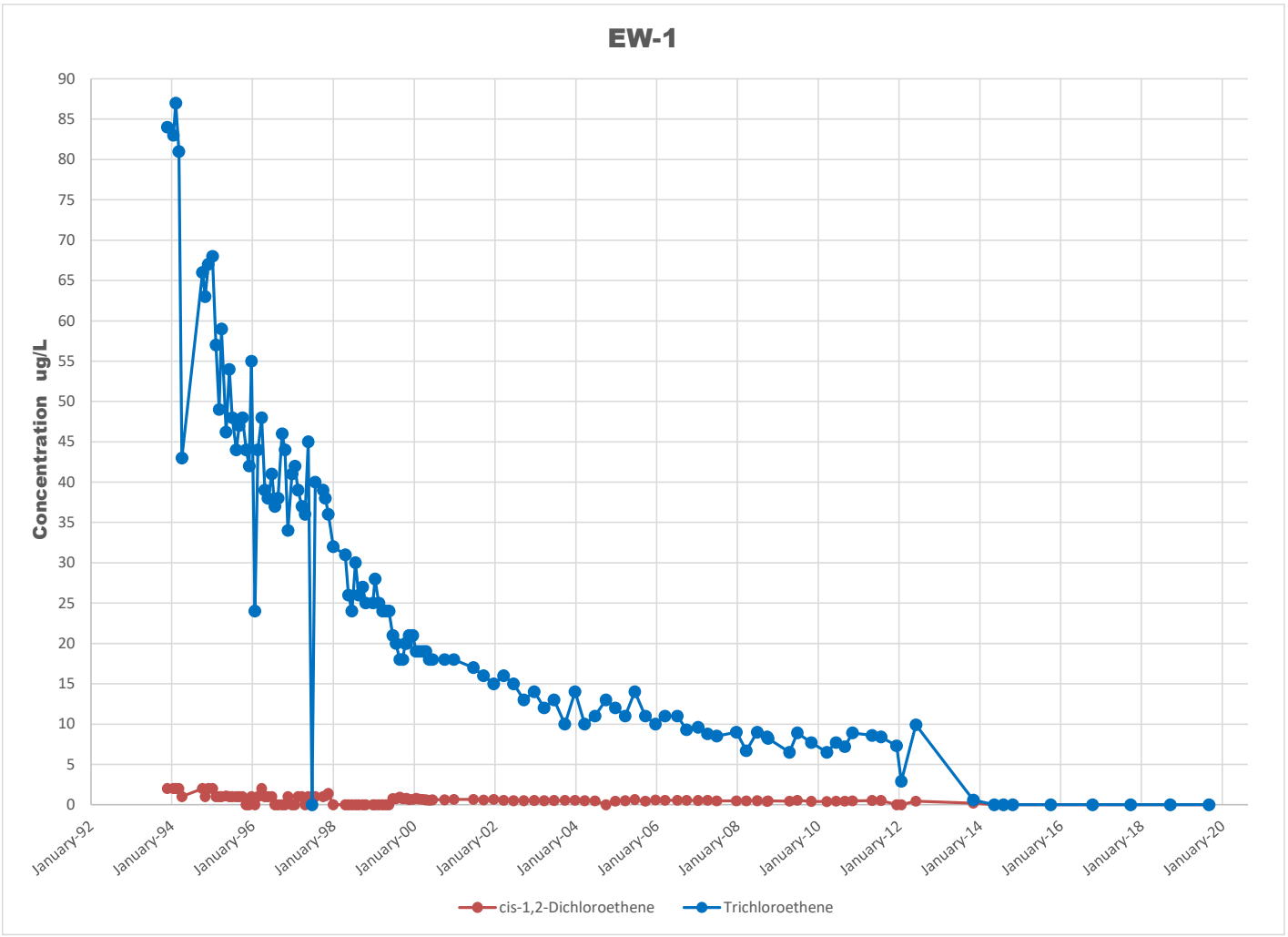
6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing:	LANG WELL DRILLING CO INC	License #:	4594	Phone:	715-848-1234
1710 W GARFIELD AVE WAUSAU WI 54401-5299				Email Address:	

8. DNR Use Only

Signed On:	04/13/2010	Submitted By:	NELSOD	Received On:	04/13/2010	Approved On:	04/20/2010


EW-1
Concentration ug/L
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

Appendix L

Tables 3.2, 4.1, and 7

Table 3.2

2018 City Well Pumping Summary
Wausau Water Supply NPL Site
Wausau, Wisconsin

		Well CW-3	Well CW-6	Well CW-7	Well CW-9	Well CW-10	Well CW-11
	Hours	147.5	593	0	79	166.7	235.2
January	Gallons	11.881	47.851	0	4.049	30.233	41.129
	gpm	1342	1345	0	854	3023	2914
	Hours	297.3	375.6	0	210.8	208.2	233.1
February	Gallons	23.736	30.408	0	10.007	41.206	40.745
	gpm	1331	1349	0	791	3299	2913
	Hours	446	291.8	198.9	352.5	147	251
March	Gallons	32.54	23.203	23.586	16.51	28.998	43.909
	gpm	1216	1325	1976	781	3288	2916
	Hours	316.7	401.8	215	204.8	153.4	133.9
April	Gallons	22.665	32.037	25.707	9.535	33.317	23.444
	gpm	1193	1329	1993	776	3620	2918
	Hours	319.3	420.3	213.4	204.9	161.8	157.5
May	Gallons	22.865	32.685	25.582	9.754	31.8	27.551
	gpm	1193	1296	1998	793	3276	2915
	Hours	334.4	383.7	185.8	221.5	178.7	126.5
June	Gallons	26.814	31.29	22.124	10.496	34.924	22.091
	gpm	1336	1359	1985	790	3257	2911
	Hours	290.7	446.5	204.1	207	383.8	0
July	Gallons	21.235	36.454	23.769	9.575	74.996	0
	gpm	1217	1361	1941	771	3257	0
	Hours	333.9	406.4	236.7	246.5	364.6	0
August	Gallons	25.979	32.957	27.562	11.454	70.568	0
	gpm	1297	1352	1941	774	3226	0
	Hours	313.8	402	168.7	174.3	169.3	83.7
September	Gallons	24.60	32.811	19.946	8.257	33.827	14.651
	gpm	1307	1360	1971	790	3330	2917
	Hours	287.8	454.9	109.5	106.3	141.8	87.4
October	Gallons	22.291	37.192	13.241	5.11	28.53	15.27
	gpm	1291	1363	2015	801	3353	2912
	Hours	312.6	406.7	121.3	135.4	99	108.2
November	Gallons	23.997	33.113	14.663	6.896	20.036	18.927
	gpm	1279	1357	2015	849	3373	2915
	Hours	314.4	427.4	140.9	140.6	134.4	88.7
December	Gallons	25.763	34.5	17.453	7.161	30.104	15.293
	gpm	1366	1345	2064	849	3733	2874
Average hrs/week:		**71.4**	**96.3**	**34.5**	**43.9**	**44.4**	**28.9**
Average gpm:		**1276**	**1346**	**1984**	**794**	**3310**	**2912**

Notes:

Hours - Total hours pumped per month
Gallons - Millions of gallons pumped per month
gpm - Gallons per minute

Table 4.1

Annual Groundwater Monitoring Event
Analytical Results - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:			CW3	WC3B	WC5A	E21	E22A	E24AR	E37A	E37A
Sample Name:			W-190909-KJ-01	W-190909-KJ-05	W-190909-KJ-04	W-190909-KJ-03	W-190909-KJ-09	W-190909-KJ-08	W-190910-KJ-17	W-190910-KJ-18
Sample Date:			09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/10/2019	09/10/2019
			EB	EB	EB	EB	EB	EB	EB	Duplicate
Parameters	**Unit**									
Volatile Organic Compounds		**WDNR ES**								
1,1,2-Trichloroethane	µg/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	7	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	70	1.0	74	1.0 U	1.0 U	1.0 U	3.6	0.52 J	0.56 J
Ethylbenzene	µg/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	5	1.0	350	0.63 J	1.0 U	1.6	0.68 J	0.42 J	0.37 J
Toluene	µg/L	800	0.50 U	0.25 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	0.75	44	0.48 J	0.50 U	0.50 U	0.26 J	0.65	0.69
Vinyl chloride	µg/L	0.2	1.0 U	10	1.0 U	1.0 U	1.0 U	0.64 J	1.0 U	1.0 U
Xylenes (total)	µg/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 4.1

Annual Groundwater Monitoring Event
Analytical Results - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:		WW4	WW6	MW10B	CW6	C2S	C4S	MW1A	R2D	R3D
Sample Name:		W-190909-KJ-06	W-190909-KJ-07	W-190909-KJ-02	W-190910-KJ-10	W-190910-KJ-11	W-190910-KJ-21	W-190910-KJ-16	W-190910-KJ-20	W-190910-KJ-23
Sample Date:		09/09/2019	09/09/2019	09/09/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019
		EB	EB	WB	WB	WB	WB	WB	WB	WB
Parameters	**Unit**									
Volatile Organic Compounds										
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	0.52 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	14	1.0 U	1.0 U	1.0 U	2.2	1.0 U	2.4	1.0 U
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	1.0 U	3.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	0.50 U	11	0.50 U	2.4	3.4	2.6	0.53	10	1.1
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.43 J	1.0 U	1.0 U

Table 4.1

Annual Groundwater Monitoring Event
Analytical Results - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:		R4D	EW1	W52	W53A	W54	W54	W55	W56	WSWD
Sample Name:		W-190910-KJ-12	W-190910-KJ-24	W-190910-KJ-13	W-190910-KJ-14	W-190910-KJ-26	W-190910-KJ-27	W-190910-KJ-15	W-190910-KJ-19	W-190910-KJ-22
Sample Date:		09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019
		WB	WB	WB	WB	WB	Duplicate	WB	WB	WB
Parameters	**Unit**									
Volatile Organic Compounds										
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0	1.0 U	0.99 J	1.0 U	15	1.0 U	0.94 J
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	14	0.50 U	6.8	82	40	39	7.7	0.50 U	6.4
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit
J - Estimated concentration
-Detected
-Concentration exceeded WDNR Enforcement Standard
EB - East Bank Well
WB - West Bank Well

Table 7

2019 Groundwater Monitoring Plan
Wausau Water Supply NPL Site
Wausau, Wisconsin

Monitoring Event	VOC Sample Locations		Laboratory Analysis	Groundwater Elevations	
	East Bank	West Bank		East Bank	West Bank
Annual - Fall	CW3, E21, E22A, E37A, E24AR, MW10B, WW4, WW6, WC3B, WC5A	EW1, CW6, R2D, R3D, R4D, C2S, C4S, W52, W53A, W54, W55, W56, WSWD, MW1A	Volatile Organic Compounds (VOC) Method 8260B	E21, E22A, E24AR, E26A, E28A, E37A, FVD5, GM6D, W.HURD, MW10B, WC3B, WC4A, WC5A, WC7, WW4, WW6, City Well CW3,	C3S, C4S, C6S, C7S, GM2S, GM4D, MW1A, MW3A, MW4A, MW7, R1D, R2D, R3D, R4D, W52, W53A, W54, W55, W56, W57, WSWD, CW9-OBS, City Wells CW6, CW9, CW10, CW11 (if pumping)

Site Specific VOC List

Acetone
Benzene
Carbon tetrachloride
Chloroform
1,1-Dichloroethene
cis-1,2-Dichloroethene
Ethylbenzene
Methylene chloride
Tetrachloroethene
Toluene
1,1,2-Trichloroethane
Trichloroethene
Vinyl chloride
Xylenes